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Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

Volume 25, No. 4 • July/August 2001

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Anniversary Issue!

25 Years of Skeptical Inquiry

Paul Kurtz, Kendrick Frazier

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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The SKEPTICAL INQUIRER (ISSN 0194-6730) is published bimonthly by the Committee for the Scientific Investigation of Claims of the Paranormal, 1310 Sweet Home Rd., Amherst, NY 14228. Printed in U.S.A. Periodicals postage paid at Buffalo, NY. Subscription prices: one year (six issues), $35; two years, $58; three years, $81; single issue, $4.95. Canadian and foreign orders: Payment in U.S. funds drawn on a U.S. bank must accompany orders; please add US$10 per year for shipping. Canadian and foreign customers are encouraged to use Visa or MasterCard.

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Subscriptions and changes of address should be addressed to: SKEPTICAL INQUIRER, Box 703, Amherst, NY 14226-0703. Or call toll-free 1-800-634-1610 (outside U.S. call 716-636-1425). Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. SKEPTICAL INQUIRER subscribers may not speak on behalf of CSICOP or the SKEPTICAL INQUIRER.

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Legal systems throughout the world have often been corrupted into suppressing unpopular scientific knowledge and into promoting pseudoscience, for political, religious, or economic reasons. In the United States new regulations regarding "expert" testimony and new strategies to quiet scientific truth are gaining strength. Because of this it is imperative that skeptics realize the extent to which legal abuses may support and advance the agenda of those opposed to rational thought.

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A French Chemist's 1833 Open Letter to Ampére

An extraordinary paper written in 1833 by the French chemist Michel-Eugène Chevreul on his experiments and interpretation of the "magical pendulum" is remarkable in its prescience and astute, rational understanding of the nature of the true source of the pendulum movement. The authors here present the first complete English translation of this special document.

HERMAN H. SPITZ and YVES MARCUARD

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EDITOR'S NOTE

Dubious Science and the National Interest

Unproven therapeutic claims and pseudoscientific medical practices aren't restricted to medicine for people. As Seattle veterinarian Robert Imrie, DVM, says in this issue, in veterinary medicine, as in human medicine, people now find themselves besieged with dubious claims for a variety of therapies. Imrie heads a veterinary task force appointed by the National Council for Reliable Health Information to deal with such matters, and he provides a report from the trenches, "Confronting Veterinary Medical Nonsense." While the article was in final proofs, the efforts Imrie describes and an intense letter writing campaign led the Executive Board of the American Veterinary Medical Association to revise its guidelines on alternative medical practices. The new, and more rational, guidelines are included in his article.

* * *

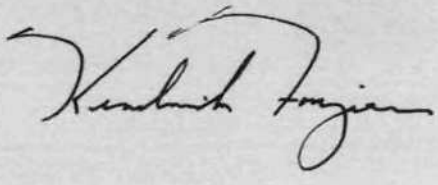
He started it all, and in this issue he provides his personal reflections on why and how, and what has transpired since. I refer to Paul Kurtz, the remarkable philosopher/scholar/organizer who in 1976 founded the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP). Paul also discusses the challenges and surprises we all encountered. We thus continue our 25th anniversary celebration of CSICOP and the SKEPTICAL INQUIRER with the second of three such sections this year. Following Paul's personal essay, which is a shorter version of one appearing in the forthcoming twenty-fifth anniversary volume, *Skeptical Odysseys* (Prometheus 2001), I offer the second part of my own personal reflections. One of my points is that I always strive to keep us close to science and bring an imaginative scientific viewpoint to skepticism. Keeping ourselves close to real science has kept us on track and guided us through otherwise difficult morasses.

* * *

When scientifically dubious ideas intersect matters of serious public interest, the results can be troublesome. Such is the case with congressional requirements to widen the use of polygraph examinations on employees at the U.S. national laboratories. Alan Zelicoff, who is both a physicist and a physician at Sandia National Laboratories, has been one of the national labs' most outspoken critics of polygraphs. In a commentary in this issue he calls them a dangerous ruse. The issue is difficult because the national labs' scientists and engineers are involved in advancing all technologies related to national security, and they take pride in being loyal citizens protective of the nation's interests. But the polygraph issue has been awkward and divisive, and Zelicoff shows why. (For an earlier SKEPTICAL INQUIRER contribution in this area see Elie A. Shneour, "Lying About Polygraph Tests," Spring 1990, reprinted in the 1998 SI anthology, *Encounters with the Paranormal: Science, Knowledge, and Belief.*)

* * *

Our first Science & Religion special issue, July/August 1999, was a great success with readers. We are pleased to announce that we are doing another one. Watch for Science and Religion 2001, in our next issue, September/October.



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A Different Angle on the Socorro UFO of 1964

DAVID E. THOMAS

The Socorro, New Mexico, UFO "landing" of April 24, 1964, has long occupied a prominent place in UFOlogical lore. The case put New Mexico on the UFO map, and was overtaken by the Roswell Incident only when that legend emerged from obscurity and blossomed in the late seventies. The case is still highly regarded; Patrick Huyghe recently wrote about the Socorro sighting in *The Anomalist*, No. 8 (Spring 2000), in a piece titled "The Best UFO Case Ever? A Review and Update of the Socorro Incident."

The witness in the Socorro case is a well-respected policeman, Lonnie Zamora, who claimed in the report he filed (included in *Project Blue Book*, Brad Steiger, Ed., 1976) that he saw a flame in the sky, "bluish and sort of orange too . . . sort of motionless flame, slowly descending . . . narrower at top than at bottom. . . . Sun was to west and did not help vision. Had green sunglasses over prescription glasses. Could not see bottom of flame because it was behind the hill . . . noise was a roar, not a blast. . . ."

The policeman drove around the area trying to see the flame again, and said he suddenly came across "a shiny type object . . . oval in shape. It was smooth—no windows or doors . . . seemed like O in shape and I at first glance took it to be overturned car." He also described "two people in white coveralls . . . two persons. . . ." Zamora said he saw the two people at a distance of 150 to 200 yards, and that "they appeared normal in shape . . . but possibly they were small adults or large kids." He also noted "what appeared to be two legs of some type from the object to the ground . . . the two legs were at the bottom of the object, slanted outwards to the ground."

Zamora then got closer to the object, got out of his car, heard a loud roar, saw a flame, ran, bumped his leg, lost his glasses, and kept on going. He saw the *object fly up, and move ten to fifteen feet* above the ground, and then leave the area "travelling very fast." He radioed his dispatcher to look out his window for "an object . . . it looks like a balloon." Nearby, the bushes were still smoldering. News reports in the local paper, *El Defensor Chieftain*, also mentioned "an unidentified tourist" who remarked about how "aircraft flew low around here," and that the strange object was a "funny-looking helicopter, if that's what it was."

Zamora's earnest nature and credibility, along with the physical traces, brought the Socorro "landing" to national attention. J. Allen Hynek came to town, and was very interested in the pod-like tracks and burn marks at the scene. Ray Stanford wrote a whole book about the incident, *Socorro Saucer in a Pentagon Pantry*. Phil Klass came to investigate. The Socorro event has appeared in numerous books and articles, and was even featured on *Unsolved Mysteries*. But what really happened there?

There are numerous hypotheses, of course. Stanford thinks it's another case of extraterrestrial visitors and government cover-up. Phil Klass, in *UFOs Explained*, makes a case that the whole thing was cooked up by the mayor to give Socorro some publicity. (Incidentally, Klass argues that the "unidentified tourist" could not possibly have seen both the craft and the police car.) Yet another hypothesis is that physics students with a little too much extra time played a trick on the town, but that *rumor doesn't have much credible support*. Major Hector Quintanilla, the Blue Book investigator for the Air Force, looked into the possibility that the craft was a prototype of the Lunar Landing Module being developed for the Apollo Moon program, but found that no lunar lander prototypes were operational in April of 1964. Recently, Larry Robinson of Indiana University has suggested that Zamora saw "a manned hot air balloon." (See "Psychic Vibrations" column, this issue.) That scenario does match some aspects of the descriptions, such as the pitch changes from low to higher frequencies Zamora reported hearing from the flame, which might be a match for the propane burners of hot-air balloons.

Yet another possible candidate has emerged in recent years, about the time of the identification of the source of the Roswell Incident to a specific program, New York University constant-level balloon launches from Alamogordo in the summer of 1947 ("The Roswell Incident and Project Mogul," SI July/

Daily Range Schedule for Friday, 24 April 1964

Prepared by Range Operations Directorate
Deputy for Range Activities
AFMDC, HAFB, New Mexico, 23 April 1964

CODE	MISSION	TYPE	SCHED TIME	A/C SUPPORT	TGT SUPPORT	CONTROL
AA	Track	Sled Test	0715T.O.-0745Commo-0800T-0810C	Army Aviation		- - -
AB	Surveyor	Helicopter Flts	0745-1145			- - -
*AC	RF4C/RF-4	Photo	0830Tel-0900R-1100C			K
AD	EMR	Tracking	0855-1105			C
AE	Computer		0900-1000			- - -
** AF	ROD Check	Radar	0900-1500			- - -
AG	Aerobee	Ground Check	1000-1100			

Portion of White Sands Missile Range Log for 24 April 1964 indicates a helicopter-borne test of the unmanned Surveyor lunar landing spacecraft was scheduled that day.

August 1995). One of the participants in these launches, Charles B. Moore, stayed in Socorro and taught atmospheric physics at the college there, New Mexico Institute of Mining and Technology (my alma mater). Moore, now retired, has had a very distinguished career, and received the American Institute of Aeronautics and Astronautics (AIAA) Otto C. Winzen Lifetime Achievement Award for his scientific exploits, which included flying a balloon to the very edge of space. He visited the Socorro "landing" site in 1966, and thinks that Lonnie Zamora is sincere, and that Zamora really did see something strange on that day in 1964.

In 1995, a colleague of Moore's who ran the Skyhook Balloon program at Holloman Air Force Base in Alamogordo, Bernard "Duke" Gildenberg, learned from Capt. James McAndrew, the Air Force's point man on its reinvestigations of the Roswell case in the 1990s, that on April 24, 1964, there were special tests being conducted at the north end of the White Sands Missile Range (WSMR) involving a helicopter used to carry a Lunar Surveyor landing craft around for some tests. A portion of the WSMR Range Log obtained by McAndrew appears on the previous page.

Surveyor was a three-legged, unmanned spacecraft, which was used to learn about the Moon before the Apollo program got there.

In fact, the Apollo 12 astronauts paid a visit to Surveyor 3 almost three years after it had landed on the Moon. This new angle on the old Socorro story was first mentioned publicly in a brief piece in the July 15, 2000, edition of James Moseley's *Saucer Smear.*

The timing isn't right for the UFO sighting—the range log calls for morning tests, and the sightings occurred in late afternoon—but then things don't always go "according to plan," and many tests that have defied completion

Photograph by Alan L. Bean

Three years after the unmanned craft Surveyor 3 landed on the Moon, the Apollo 12 mission touched down nearby. This image shows mission commander Pete Conrad retrieving items from Surveyor 3.

by morning have been known to somehow get finished up in the afternoon. In fact, bombing runs scheduled for that part of the range might have delayed the tests. There are many other tantalizing bits that might support the Surveyor explanation for Socorro.

- The Surveyor tests were done with a small Bell helicopter that supported the craft from its side. The helicopter and spacecraft would have presented a bizarre profile. The Surveyor's slanted legs fit Zamora's description well, and are also a match for the shape of the "landing pod imprints" found later. In Stanford's 1976 book, he mentions Phil Klass's comment that landing pads like Surveyor's were among the only practical shapes for that function.

- The spacecraft used vernier engines and attitude jets to probe and sample soil, which could explain the flames the policeman saw, and the burn marks many saw. The flames weren't being used for lift; that was supplied by the helicopter. The burn marks at the site did not indicate sufficient thrust to lift a large vehicle, according to Hynek.

- The Surveyor used a mechanical scoop with a shape that matches a rectangular trough photographed at the Socorro site.

- Zamora described the craft as "aluminum-white," which certainly matched the bulk of the Bell helicopter.

- The tests missions were manned by a helicopter pilot and a Hughes engineer . . . two persons, in white coveralls.

- Most people in Socorro, and several of the investigators, thought it was most likely a secret government experiment, and some Blue Book researchers even pinned it down as a tenant operation run by Holloman, the base for the Surveyor test flights.

- Lava beds were on the Surveyor sampling agenda, and there are indeed lava beds in and around the missile range (south of Socorro).

Of course, this new evidence is far from conclusive. A lot has happened since 1964, and it's difficult to reconstruct events from that long ago, especially events with strong implications. Was it a college prank? A hoax? A balloon? An alien craft from another world? Perhaps we'll never really know. Gildenberg is confident that William of Occam, of Occam's Razor fame, would think kindly of the Surveyor explanation, especially over some of the other contenders.

Dave Thomas is a physicist, president of New Mexicans for Science and Reason, a SKEPTICAL INQUIRER *consulting editor, and a newly elected CSICOP Fellow.*

Socorro a First Spark for Skeptical Curiosity

The Socorro Landing has a special place in my heart, as it sparked my first skeptical curiosity. Back in 1964, I was an eleven-year-old boy living just 90 miles north of Socorro, and the Socorro UFO story was big news in the young boy community. Some neighbor kids drew the outline of an alien foot in the alley, and tried to convince me it was real, but I "debunked" the assertions by pointing out the unnatural concave shape of the "feet," and the over-large distance between prints.

After the neighbor kids confessed, I penciled in a little UFO on a photograph of my back yard, and showed it to them. I expected them to laugh it off as yet another hoax, but was surprised when the former hoaxers bought into my doctored photo hook, line, and sinker. That was my first encounter with the power of the paranormal; I'm sure it won't be my last.—*D.E.T.*

Rebirthing Update: Therapists Convicted, Therapy Outlawed in Colorado

Two Colorado therapists, Julie Ponder and Connell Watkins, were convicted April 20 of reckless child abuse resulting in a young girl's death during a New Age "rebirthing" therapy session. They each face up to forty-eight years in prison on the abuse charge, and are to be sentenced in June. The verdict came almost exactly one year to the day that ten-year-old Candace Newmaker died in the care of Watkins and Ponder. During the session, the girl was wrapped tightly in a flannel blanket and pushed on with pillows to simulate birth. The session was held at the home of the unlicensed and unregistered Watkins. (See Martin Gardner's column "Primal Scream: A Persistent New Age Therapy" in the last issue, and "New Age 'Rebirthing' Treatment Kills Girl," SI 24[5] September/October 2000.)

At the trial, an important piece of evidence was a videotape of the session, which showed Candace begging for her life from under her heavy fabric "womb." Excerpts of dialogue from the video were published by the *Denver Rocky Mountain News*, and provide a disturbing and chilling account of Candace's last hour of life. Throughout the 70-minute tape, while Candace suffocates and lies in her vomit and feces, she begs the therapists to get off of her and let her breathe. At one point, in response to Candace's crying and pleas, the four adults present pushed even harder on the girl, putting nearly 700 pounds on top of the seventy-pound fourth-grader. Here are excerpts from the tape:

CANDACE NEWMAKER: I can't do it. (Screams) I'm gonna die.
JULIE PONDER: Do you want to be reborn or do you want to stay in there and die?
CANDACE NEWMAKER: Quit pushing on me, please . . . I'm gonna die now.
JULIE PONDER: Do you want to die?
CANDACE NEWMAKER: No, but I'm about to. . . . Please, please I can't breathe....
CANDACE NEWMAKER: Can you let *me have some oxygen? You mean, like* you want me to die for real?
JULIE PONDER: Uh huh.
CANDACE NEWMAKER: Die right now and go to heaven?
JULIE PONDER: Go ahead and die right now. For real. For real. . . .
CANDACE NEWMAKER: Get off. I'm sick. Get off. Where am I supposed to come out? Where? How can I get there?
CONNELL WATKINS: Just go ahead and die. It's easier. . . . It takes a lot of courage to be born.
CANDACE NEWMAKER: You said you would give me oxygen.
CONNELL WATKINS: You gotta fight for it. . . . (Candace vomits and defecates.)
CONNELL WATKINS: Stay in there with the poop and vomit.
CANDACE NEWMAKER: Help! I can't breathe. I can't breathe. It's hot. I can't breathe....
CONNELL WATKINS: Getting pretty tight in there.
JULIE PONDER: Yep.... less and less air all the time. . . .
JULIE PONDER: She gets to be stuck in her own puke and poop.
CONNELL WATKINS: Uh huh. It's her own life. She's a quitter.
CANDACE NEWMAKER: No. . . . (This is Candace's last word.)

The womens' defense rested, in part, on trying to convince the jury that the dead girl was a manipulative liar and was being deceptive when she said she couldn't breathe and begged to be set free. Watkins sent a message to her supporters saying that "somehow the 10-year-old inexplicably stopped breathing." A day after the verdict Colorado Governor Bill Owens signed a law making rebirthing therapy illegal, though nothing was done *to address the larger problem of allowing* unlicensed therapists such as Watkins to practice other dubious treatments. In Colorado no license is required to practice psychotherapy.

A search of rebirthing Web sites showed them oddly silent about both the girl's death and the verdict, though one proponent of rebirthing, Peter DeLong, wrote a letter to the *Los Angeles Times* defending the therapy. In it he claimed that Watkins and Ponder's technique "bears no resemblance" to rebirthing therapy as he practices and teaches it; "it does not involve physical contact or restriction in any way." Another rebirther reported that the therapist "apparently knew about rebirthing, but she wasn't using that technique with the child when she died."

Some evidence suggests that what Watkins and Ponder were doing was in fact out of the mainstream even for "alternative" psychotherapy. Watkins had been trained in that particular technique in 1999 by California marriage and family therapist Douglas Gosney, and cited him as an expert. Gosney defended his brand of "rebirthing" therapy and suggested that some pre-existing condition had caused Candace's death. Gosney believes that the patients he treats with his therapy act out because they were traumatized during (or before) birth. (There is, however, no credible evidence that either adolescent or adult brains harbor any repressed memories of birth.)

Whether Ponder and Watkins were using rebirthing therapy correctly (or at all), the fact remains that a child died while undergoing an unproven and unorthodox New Age therapy by those who claimed to know what they were doing. This case should serve as a powerful response to the common question, "What harm does the New Age do?"

—Benjamin Radford

Benjamin Radford is Managing Editor of the SKEPTICAL INQUIRER.

Chiropractic Deal with York University Is Dead

In 1994, plans were begun for the union of the Canadian Memorial Chiropractic College (CMCC) with York University in Toronto, which would have been the world's first such union of a chiropractic school with a major university. These plans were given momentum when, in

May 1998, York University's Senate granted "approval in principle" to a proposal that would allow York University to issue a "Doctor of Chiropractic" degree. This would have provided chiropractic practitioners with the legitimacy that they have long sought.

York's Faculty of Pure and Applied Science, as well as most of York's psychology faculty members, were strongly opposed to such a union, but it appeared that the proposal had sufficient support within the administration, and indeed within the university community at large, to make it all but unstoppable. A campaign to educate the York community about the many pseudoscientific and antiscientific aspects of chiropractic was mounted by a small handful of opponents. In support of their efforts, an international petition—sponsored by the Council for Scientific Medicine, and which included the names of two Nobel laureates in Medicine, as well as several CSICOP members—was delivered to York University's administration and the Chair of Board of Governors in February 1999. It strongly urged the university not to affiliate with CMCC.

In the end, the Senate's Academic Policy and Planning Committee maintained that an academic relationship with the CMCC could not proceed without the sponsorship of an academic faculty. The Faculty of Pure and Applied Sciences had refused such sponsorship early on, and so the administration turned to the of Atkinson Faculty of Liberal and Professional Studies—which includes under its mandate a health sciences orientation—for sponsorship. Early indications were that this faculty was very amenable to the proposal.

However, at a meeting held on March 28, 2001, the Atkinson Faculty Council narrowly voted against a resolution to establish an academic relationship with the CMCC, thus effectively blocking the establishment of a York Doctor of Chiropractic degree. At a subsequent meeting of the University Senate on April 26, an official announcement was made that "Senate's approval in principle [for an affiliation with the Canadian Memorial Chiropractic College] has been negated." With this, the project to bring chiropractic and the Canadian Memorial Chiropractic College to York University formally died. An important battle in defense of science and rationality has been won. (For a full chronicling of the attempt to bring chiropractic to York University, consult www.ndir.com/chiro.)

—James Alcock

James Alcock is a professor in the Department of Psychology at Glendon College, York University, Toronto, Ontario.

CSICOP Elects Six New Fellows

The Executive Council of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) has elected six new CSICOP Fellows. Fellows are chosen for distinguished contributions to science and skepticism. The new Fellows:

- Saul Green, biochemist, science editor of the *Scientific Review of Alternative Medicine*, and President of ZOL Consultants, New York City.
- Irmgard Oepen, professor of medicine (retired), Marburg, Germany.
- Massimo Polidoro, magician, writer, investigator, executive director of CICAP (*Comitato Italiano per il Controllo delle Affermazioni sul Paranormale*), Italy.
- David E. Thomas, physicist and mathematician (Quasar International, Albuquerque, New Mexico), president of New Mexicans for Science in Reason.
- Neil deGrasse Tyson, astrophysicist and director, Hayden Planetarium, New York City.
- Richard Wiseman, psychologist, University of Hertfordshire, U.K.

Thomas, Tyson, and Wiseman were CSICOP scientific consultants prior to being named Fellows.

—Kendrick Frazier

Kendrick Frazier is Editor of the SKEPTICAL INQUIRER.

Pyramid Schemes: For Women Only

Five women were recently charged with felonies in southern New Mexico for being involved in pyramid scams that have been making their way through the state since 1999. The new women-only pyramid scheme has been gathering momentum across North America with reports coming in from across Canada and the United States. Large amounts of money are said to be changing hands with the majority of those hands left empty when the scam ends.

The latest twist on an old con makes many women especially vulnerable to being taken advantage of by other women. The *Albuquerque Journal* recently published a front page feature article on the issue, "Women Scamming Women."

Groups are formed with appealing names such as "The Circle of Friends," "Women Helping Women," and "Women's Gifting Circle." In addition to paying a joining fee of up to $5,000 and securing a place at the bottom tier of the pyramid, women are also finding other "benefits" in joining these groups. The common attractions found within the New Age movement that have proven successful in their appeal to the female population have also been injected into the pyramid scheme to maximize participation among this latest target audience. Friendship, spiritual guidance, holistic healing, and emotional therapies are included as part of the package.

New recruits are assured that all activity is above-board and that their involvement is perfectly legal—New Mexico Attorney General Patricia Madrid disagrees. Despite that, women sign waivers upon joining stating they do not expect any returns on their money. Potential members are encouraged to sign up by friends and family members who genuinely believe they have the individual's best interests at heart. Participation is touted as a once-in-a-lifetime opportunity. Stories of philanthropy and good deeds sweep through the group to demonstrate the sincerity and benevolence of those involved. The temptation is not limited to poor and uneducated women either—doctors, teachers, and women of all sorts fall prey to the empty promises of this pyramid scheme.

The mathematics involved is often glossed over: for all eight new members joining the bottom tier of the pyramid to receive their fortune, fourteen new pyramids must be created and a total of 112 additional members must be recruited. More often than not, before this happens, recruitment declines to nil and only the few women in the top tiers have received their "gift." When all is said and done the pyramid collapses, with many women losing not only a substantial amount of money but also peace of mind.

—Amanda Chesworth

Amanda Chesworth runs CSICOP's new Young Skeptics Program. She lives in Albuquerque, New Mexico.

Rhine Research Center Plans to Build a New Home in Durham

Parapsychology is going to get a new home.

That is, parapsychologists at the Rhine Research Center in Durham, North Carolina, named for J.B. Rhine, the so-called father of parapsychology who conducted his experiments in Durham, plan to trade in the Colonial Revival-style home they have occupied for forty years for a new building constructed solely for the study of psi phenomena.

The Rhine Research Center is the nation's oldest laboratory for the scientific study of psychic experiences, telepathy, and ESP. The center's board of directors have sold the pre-1920s house to Duke University and plan a new $300,000 to $500,000 center near Duke's West Campus.

According to a feature article in the *Raleigh News & Observer* (March 12), center officials hope to be in the new building by April 2002. They say it will have capabilities the old one never had as the center expands its research in what the newspaper called "a renaissance for psychic studies."

There are other labs for psi research, but Stephan A. Schwartz, a spokesman for the Parapsychological Association, said he could think of no freestanding building in the United States that has been constructed from the ground up for studying parapsychology, as the new one will be. Schwartz said the Rhine Research center is to parapsychology what St. Andrews is to golf.

There's even talk at Rhine of officially joining forces with Duke again, through the Duke University Health System's Center for Integrative Medicine.

"Thirty years ago, there was a huge chasm between parapsychology and standard biomedical research," the newspaper quotes Martin J. Sullivan, co-director of the Duke Center for Integrative Medicine, as saying. "The edges are blurring."

Critics of parapsychology say most of the experiments conducted by J.B. Rhine and his associates in Durham starting in the late 1920s, are, in retrospect, flawed, unreplicable, and inconclusive. But the article says many parapsychologists have moved past the question of whether psi exists—they assume it does—to the questions of how it works and what it can be used for.

Said John Palmer, director of the Rhine Research Center, "We're very confident we're not wasting our time."

—Kendrick Frazier

Belief, Perceptions, and Full Moons at a Psychiatric Hospital

I'm known as both an artist and a cult expert, but over the past two and a half years I have worked for a hospital that serves patients with mental health problems on an emergency basis. This facility has been in operation for twenty-five years. It opened about the same time that a large, 6,000-bed state mental hospital began a process of transferring patients back to their home communities. The latter process reflected a new approach for treating mental patients. Consistent with new laws and taking advantage of new medicines, the mental health industry offered a customized, per need treatment at localized "base service units," as opposed to the old style of "warehousing" large populations. Despite this more humanized treatment, many patients nevertheless experienced acute episodes of relapse with increased symptoms, thus needing immediate treatment. The emergency hospital emerged as an important way to treat this need.

My current job is as the night manager in the crisis intake department, where I take all emergency calls and begin processing of incoming patients after midnight until eight in the morning. I work with a wide range of staff, including psychiatrists, nurses, and psych-technicians. I encounter many police officers who bring in clients with mental symptoms for involuntary treatment. Among the staff and police officers, I regularly hear mention of the full moon effect. These people believe that a full moon produces more incidents of mental crisis than non-full moon days, as evidenced by one police officer who recently stated to me: "It is crazy out here. Tonight must be a full moon." In that case, he was about a week short on his guess.

Out of curiosity, I decided to run a brief study on the full moon effect, if any, on this hospital. I was aware that all serious, reputable studies done in the past show that there is little or no

Fund for the Future

CSICOP AT THE CENTER FOR INQUIRY

CFI-International
Amherst, N.Y.

Promote CSICOP

Using the Media & Telecommunications to Promote Science and Reason

The Fund for the Future is a capital campaign to provide CSICOP with the resources needed to more effectively influence media and public opinion. The 90s were defined by a telecommunications revolution, along with an explosion of misinformation available to the scholar and citizen alike. The hunger for superstition, pseudoscience, the paranormal and miraculous solutions has never been more acute.

The Ten-Year Plan

CFI-Midwest
Kansas City, Mo.

Contributions are needed for current priorities:

- Increased media appearances by skeptical spokespersons
- Press releases, opinion pieces and media alerts
- Greater exposure through the Internet, including webcasting
- National initiatives coordinated by the Council for Media Integrity
- Instructional materials introducing skepticism to elementary and secondary school students
- Video production

How Can You Help?

CFI-West
Los Angeles, Ca.

CSICOP has established its expertise and integrity. It's time to command more media attention and a larger audience. The Center for Inquiry Fund for the Future is about new methods of outreach and broader influence, and is driven by an ambitious ten-year strategic plan for growth.

We depend on the support of readers and friends to continue leading the international skeptical movement. Gifts to the Fund for the Future provide the resources we need to respond to today's challenges.

All gifts are gratefully accepted. The Fund for the Future welcomes gifts of encouragement and major investments.

Cash contributions and gifts of stock are needed for immediate growth and new initiatives. We also offer a range of planned giving opportunities, from bequests to assorted tax-advantaged trusts and pooled funds. Planned gifts support our work in the future and can provide an income stream for you and a beneficiary. You may also make a gift supporting the general endowment, or establish a special purpose fund underwriting a long-term project that expresses your personal interests and commitment to skepticism.

In today's stock market, gifts of highly appreciated securities offer particular advantages to the donor. When donating stock to a charitable organization, you avoid taxes and maximize the impact of the asset you are donating.

Contact the Development Director at (716) 636-7571 to discuss accomplishing your philanthropic and financial goals and contributing to the Fund for the Future.

Bill Nye "The Science Guy," Joe Nickell, and entertainer Steve Allen appear on a radio show.

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Fax (716) 636-1733

Council for Media Integrity

Co-chair of the Fund for the Future Campaign: above, author and critic Martin Gardner.

Formed just weeks after its inclusion in the Ten-Year Plan, the Council for Media Integrity monitors and challenges media programs that convey unfounded claims and mislead the public about science. Members include E. O. Wilson, Stephen Jay Gould, and many others. CSICOP will invest in electronic infrastructure to facilitate rapid response to irresponsible programs.

Enhanced Library Resources

The Center for Inquiry's skeptics' library—already the finest of its kind in the world—needs additional funding to enlarge its core collection and add electronic media. Worldwide modem access to the library's catalog is already nearly complete.

Adult Education

The Council cosponsors the Center for Inquiry Institute, which has already expanded its offerings to include a new three-year certificate program in science and skepticism. Courses are scheduled in Amherst, Los Angeles, and other cities.

Regional Outreach

With the establishment of The Center for Inquiry–West (Los Angeles), The Center for Inquiry–Midwest (Kansas City) and The Center for Inquiry–Rockies (Boulder, Colorado), giant steps have been taken to enhance direct field service to skeptical activists. Additional regional centers are planned, with expanded calendars of activities.

Focusing Upon the Young

To present the skeptical message more compellingly to the young, CSICOP will develop new materials—ranging from age-appropriate print publications to audio and video cassettes and instructional coursework. Goals include enhanced understanding of science and improved critical thinking skills.

evidence to support a full moon effect on human behavior. (See I.W. Kelly, et al., "The Moon Was Full and Nothing Happened: A Review of Studies on the Moon and Human Behavior," SI 10 [2], Winter 1985–86.) I was also aware, as I had studied astrology extensively, that many astrologers believe that the full moon effect carries over a three-day period that includes the days before and after a full moon. What I chose to do was examine the numbers of admissions over a twenty-six-month period at this hospital, because increased admission activity correlates nicely with what most believers in the full moon effect expect. Believers as well as many patients I encounter tend to think that mental health consumers are particularly sensitive to the full moon. I recorded results for both the full moon days as well as for the three-day sequence of alleged "moon power," and I calculated the average day's admissions over that period.

Over the study period, this hospital was considered full with sixty-three patients and averaged over fifty patients per day. The average length of stay was around eight days.

The study period was from January 1999 through February 2001, or twenty six full moons and months. Full moons were recorded according to the *Old Farmer's Almanac*, eastern standard time. The results are:

> Total admissions on full moon days = 158 with 6.0 as the average.
> Total admissions over a three-day period of full moon = 492 with 6.3 as the average.
> Average admissions per day (188 average per month divided by 30.2) = 6.23. (There were 4,888 admissions during the 26-month period.)

Once again, statistics show that the full moon period over time is not extraordinary at a psychiatric emergency hospital. In fact, it is quite normal.

This brief, informal study also demonstrates that the full moon's power is primarily aesthetic in human affairs, not unlike any other common symbol. Though the moon has power as a force in nature over tides and the amount of night light that Earth creatures experience, its ability to influence affairs of the heart and mind remains symbolic. This is not to say that symbols have no power to move human emotions or thoughts. Take the swastika, for example. The "twisted cross" in the hands of the Nazis transformed from a symbol of well-being in ancient India or the Buddhist symbol of limitlessness and eternity later in China to one of fascist and racist ideology. Nazis also attributed occult power to the swastika, not unlike astrologers attribute occult power to the moon. I think it is this attribution of occult or magical power that fascinates the average believer in full moon effects. Though the believers swear they experience an increase in activity in a mental hospital, the facts do not support their perceptions.

—Joe Szimhart

Joe Szimhart is a cult expert, artist, and psychiatric hospital staff member who lives in Pottstown, Pennsylvania.

SKEPTICAL INQUIRER 25-Year Index Now Available Online

A twenty-five-year index to all issues of the SKEPTICAL INQUIRER, volumes 1–25, 1976–2001, is now available and online. You can access it at CSICOP's Web site www.csicop.org. Go to the SKEPTICAL INQUIRER home page and click on "Complete Index to Articles." Or go straight to the index at www.csicop.org/si/index/. It will be periodically revised and updated.

A subject index has been completed first. You can click on any letter of the alphabet to find subjects beginning with that letter. Each entry gives the title, author, volume number, issue number, and inclusive pagination. Indexes for authors and reviews will be following later this year.

The SKEPTICAL INQUIRER's Complete Online Index was compiled and indexed by Andrew Lutes and adapted for the Web by Kevin Christopher.

The table of contents of all issues of the SKEPTICAL INQUIRER are also available on the SI Web page. All back issues of SI are kept in print and any can be ordered through a link on the index home page, or at www.csicop.org/si/back-issues.html, or by calling 1-800-634-1610. This is the same number for ordering subscriptions.

—Kendrick Frazier

Lack of UFOs Shuts Down British Flying Saucer Bureau

"The British Flying Saucer Bureau, which has been hunting for extraterrestrial activity for a half a century, has closed," according to an Australian Associated Press report published in the *Sydney Morning Herald* on April 23.

The bureau, which at one time boasted 1,500 members worldwide, has over the years received weekly reports listing up to thirty UFO sightings. These days there are rarely any such reports, and the bureau's monthly meetings have now been scrapped because of lack of participants. Denis Plunkett, who was a co-founder of the bureau in 1953, says UFO sightings are in the middle of a long trough. He says there are not enough sightings to warrant continuing.

—Kendrick Frazier□

A Skeptical Look at Karl Popper

Sir Karl Popper
Perpetrated a whopper
When he boasted to the world that he
and he alone
Had toppled Rudolf Carnap from his
Vienna Circle throne.

—a clerihew by Armand T. Ringer

Sir Karl Popper, who died in 1994, was widely regarded as England's greatest philosopher of science since Bertrand Russell, indeed a philosopher of worldwide eminence. Today his followers among philosophers of science are a diminishing minority, convinced that Popper's vast reputation is enormously inflated.

I agree. I believe that Popper's reputation was based mainly on his persistent but misguided efforts to restate commonsense views in a novel language that is rapidly becoming out of fashion.

Consider Popper's best known claim: that science does not proceed by "induction"—that is, by finding confirming instances of a conjecture—but rather by falsifying bold, risky conjectures. Confirmation, he argued, is slow and never certain. By contrast, a falsification can be sudden and definitive. Moreover, it lies at the heart of the scientific method.

Martin Gardner collaborated with Carnap on a book currently available as a Dover paperback titled Introduction to the Philosophy of Science.

A familiar example of falsification concerns the assertion that all crows are black. Every find of another black crow obviously confirms the theory, but there is always the possibility that a non-black crow will turn up. If this happens, the conjecture is instantly discredited. The more often a conjecture passes efforts to falsify it, Popper maintained, the greater becomes its "corroboration," although corroboration is also uncertain and can never be quantified by a degree of probability. Popper's critics insist that "corroboration" is a form of induction, and Popper has simply sneaked induction in through a back door by giving it a new name. David Hume's famous question was "How can induction be justified?" It can't be, said Popper, because there *is* no such thing as induction!

Karl Popper

There are many objections to this startling claim. One is that falsifications are much rarer in science than searches for confirming instances. Astronomers look for signs of water on Mars. They do not think they are making efforts to falsify the conjecture that Mars never had water.

Falsifications can be as fuzzy and elusive as confirmations. Einstein's first cosmological model was a universe as static and unchanging as Aristotle's. Unfortunately, the gravity of suns would make such a universe unstable. It would collapse. To prevent this, Einstein, out of thin air, proposed the bold conjecture that the universe, on its pre-atomic level, harbored a mysterious, undetected repulsive force he called the "cosmological constant." When it was discovered that the universe is expanding, Einstein considered his conjecture falsified. Indeed, he called it "the greatest blunder of my life." Today, his conjecture is back in favor as a way of explaining why the universe seems to be expanding faster than it should. Astronomers are not trying to falsify it; they are looking for confirmations.

Falsification may be based on faulty observation. A man who claims he saw a white crow could be mistaken or even lying. As long as observations of black crows continue, it can be taken in two

ways: as confirmations of "all crows are black," or disconfirmations of "some crows are not black." Popper recognized, but dismissed as unimportant, that every falsification of a conjecture is simultaneously a confirmation of an opposite conjecture, and every confirming instance of a conjecture is a falsification of an opposite conjecture.

Consider the current hypothesis that there is a quantum field called the Higgs field, with its quantized particle. If a giant atom smasher some day, perhaps soon, detects a Higgs, it will confirm the conjecture that the field exists. At the same time it will falsify the opinion of some top physicists, Oxford's Roger Penrose for one, that there *is* no Higgs field.

To scientists and philosophers outside the Popperian fold, science operates mainly by induction (confirmation), but also and less often by disconfirmation (falsification). Its language is almost always one of induction. If Popper bet on a certain horse to win a race, and the horse won, you would not expect him to shout, "Great! My horse failed to lose!"

Astronomers are now finding compelling evidence that smaller and smaller planets orbit distant suns. Surely this is inductive evidence that there may be Earth-sized planets out there. Why bother to say, as each new and smaller planet is discovered, that it tends to falsify the conjecture that there are no small planets beyond our solar system? Why scratch your left ear with your right hand? Astronomers are looking for small planets. They are not trying to refute a theory any more than physicists are trying to refute the conjecture that there is no Higgs field. Scientists seldom attempt to falsify. They are inductivists who seek positive confirmations.

At the moment the wildest of all speculations in physics is superstring theory. It conjectures that all basic particles are different vibrations of extremely tiny loops of great tensile strength. No superstring has yet been observed, but the theory has great explanatory power. Gravity, for example, is implied as the simplest vibration of a superstring. Like prediction, explanation is an important aspect of induction. Relativity, for instance, not only made rafts of successful predictions but explained data previously unexplained. The same is true of quantum mechanics. In both fields researchers used classical induction procedures. Few physicists say they are looking for ways to falsify superstring theory. They are instead looking for confirmations.

Ernest Nagel, Columbia University's famous philosopher of science, in his *Teleology Revisited and Other Essays in the Philosophy and History of Science* (1979), summed it up this way: "[Popper's] conception of the role of falsification ... is an oversimplification that is close to being a caricature of scientific procedures."

For Popper, what his chief rival Rudolf Carnap called a "degree of confirmation"—a logical relation between a conjecture and all relevant evidence—is a useless concept. Instead, as I said earlier, the more tests for falsification a theory passes, the more it gains in "corroboration." It's as if someone claimed that deduction doesn't exist, but of course statements can logically imply other statements. Let's invent a new term for deduction, such as "justified inference." It's not so much that Popper disagreed with Carnap and other inductivists as that he restated their views in a bizarre and cumbersome terminology.

To Popper's credit he was, like Russell, and almost all philosophers, scientists, and ordinary people, a thoroughgoing realist in the sense that he believed the universe, with all its intricate and beautiful mathematical structures, was "out there," independent of our feeble minds. In no way can the laws of science be likened to traffic regulations or fashions in dress that vary with time and place. Popper would have been as appalled as Russell by the crazy views of today's social constructivists and postmodernists, most of them French or American professors of literature who know almost nothing about science.

Scholars unacquainted with the history of philosophy often credit Popper for being the first to point out that science, unlike math and logic, is never absolutely certain. It is always corrigible, subject to perpetual modification. This notion of what the American philosopher Charles Peirce called the "fallibilism" of science goes back to ancient Greek skeptics, and is taken for granted by almost all later thinkers.

In *Quantum Theory and the Schism in Physics* (1982) Popper defends at length his "propensity theory" of probability. A perfect die, when tossed, has the propensity to show each face with equal probability. Basic particles, when measured, have a propensity to acquire, with specified probabilities, such properties as position, momentum, spin and so on. Here again Popper is introducing a new term which says nothing different from what can be better said in conventional terminology.

In my opinion Popper's most impressive work, certainly his best known, was his two-volume *The Open Society and Its Enemies* (1945). Its central theme, that open democratic societies are far superior to closed totalitarian regimes, especially Marxist ones, was hardly new, but Popper defends it with powerful arguments and awesome erudition. In later books he attacks what he calls "historicism," the belief that there are laws of historical change that enable one to predict humanity's future. The future is unpredictable, Popper argued, because we have free wills. Like William James, Popper was an indeterminist who saw history as a series of unforeseeable events. In later years he liked to distinguish between what he called three "worlds"—the external physical universe, the inner world of the mind, and the world of culture. Like Carnap and other members of the Vienna Circle, he had no use for God or an afterlife.

Karl Raimund Popper was born in Vienna in 1902 where he was also educated. His parents were Jewish, his father a wealthy attorney, his mother a pianist. For twenty years he was a professor of logic and scientific method at the London School of Economics. In 1965 he was knighted by the Crown.

I am convinced that Popper, a man of enormous egotism, was motivated by an intense jealousy of Carnap. It seems

NOTES OF A FRINGE-WATCHER
Continued on page 72

Tracking the Swamp Monsters

Do mysterious and presumably endangered manlike creatures inhabit swamplands of the southern United States? If not, how do we explain the sightings and even track impressions of creatures that thus far have eluded mainstream science? Do they represent additional evidence of the legendary Bigfoot or something else entirely? What would an investigation reveal?

Monster Mania

The outside world learned about Louisiana's Honey Island Swamp Monster in 1974 when two hunters emerged from a remote area of backwater sloughs with plaster casts of "unusual tracks." The men claimed they discovered the footprints near a wild boar that lay with its throat gashed. They also stated that over a decade earlier, in 1963, they had seen similar tracks after encountering an awesome creature. They described it as standing seven feet tall, being covered with grayish hair, and having large amber-colored eyes. However, the monster had promptly run away and an afternoon rainstorm had obliterated its tracks, the men said.

The hunters were Harlan E. Ford and his friend Billy Mills, both of whom worked as air-traffic controllers. Ford told his story on an episode of the 1970s television series *In Search of . . .* According to his granddaughter, Dana Holyfield (1999a, 11):

> When the documentary was first televised, it was monster mania around here. People called from everywhere. . . . The legend of the Honey Island Swamp Monster escalated across Southern Louisiana and quickly made its way out of state after the documentary aired nationwide.

Harlan Ford continued to search for the monster until his death in 1980. Dana recalls how he once took a goat into the swamp to use as bait, hoping to lure the creature to a tree blind where Ford waited—uneventfully, as it happened—with gun and camera. He did supposedly find several, different-sized tracks on one hunting trip. He also claimed to have seen the monster on one other occasion, during a fishing trip with Mills and some of their friends from work. One of the men reportedly then went searching for the creature with a rifle and fired two shots at it before returning to tell his story to the others around the campfire (Holyfield 1999a, 10–15).

Searching for Evidence

Intrigued by the monster reports, which I pursued on a trip to New Orleans (speaking to local skeptics at the planetarium in Kenner), I determined to visit

Figure 1. Louisiana's pristine Honey Island Swamp is the alleged habitat of a manlike monster.

Joe Nickell is CSICOP's Senior Research Fellow and author of numerous investigative books.

the alleged creature's habitat. The Honey Island Swamp (figure 1) comprises nearly 70,000 acres between the East Pearl and West Pearl rivers. I signed on with Honey Island Swamp Tours, which is operated out of Slidell, Louisiana, by wetlands ecologist Paul Wagner and his wife, Sue. Their "small, personalized nature tours" live up to their billing as explorations of "the deeper, harder-to-reach small bayous and sloughs" of "one of the wildest and most pristine river swamps in America" ("Dr. Wagner's" n.d.).

The Wagners are ambivalent about the supposed swamp monster's existence. They have seen alligators, deer, otters, bobcats, and numerous other species but not a trace of the legendary creature (Wagner 2000). The same is true of the Wagners' Cajun guide, Captain Robbie Charbonnet. Beginning at age eight, he has had forty-five years' experience, eighteen as a guide, in the Honey Island Swamp. He told me he had "never seen or heard" something he could not identify, certainly nothing that could be attributed to a monster (Charbonnet 2000).

Suiting action to words throughout our tour, Charbonnet repeatedly identified species after species in the remote swampland as he skillfully threaded his boat through the cypresses and tupelos hung with Spanish moss. Although the cool weather had pushed 'gators to the depths, he heralded turtles, great blue herons, and other wildlife. From only a glimpse of its silhouetted form he spotted a barred owl, then carefully maneuvered for a closer view. He called attention to the singing of robins, who were gathering there for the winter, and pointed to signs of other creatures, including freshly cut branches produced by beavers and, in the mud, tracks left by a wild boar. But there was not a trace of the swamp monster. (The closest I came was passing an idle boat at Indian Village Landing emblazoned "Swamp Monster Tours.")

Another who is skeptical of monster claims is naturalist John V. Dennis. In his comprehensive book *The Great Cypress Swamps* (1988), he writes: "Honey Island has achieved fame of sorts because of the real or imagined presence of a creature that fits the description of the Big Foot of movie renown. Known as the Thing, the creature is sometimes seen by fishermen." However, he says, "For my part, let me say that in my many years of visiting swamps, many of them as wild or wilder than Honey Island, I have never obtained a glimpse of anything vaguely resembling Big Foot, nor have I ever seen suspicious-looking footprints." He concludes, "Honey Island, in my experience, does not live up to its reputation as a scary place."

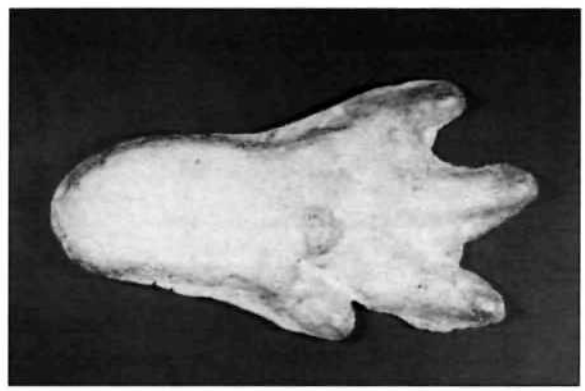

Figure 2. This plaster cast preserves an alleged Honey Island Swamp Monster track. (Photos by Joe Nickell)

In contrast to the lack of monster experiences from swamp experts are the encounters reported by Harlan Ford and Billy Mills. Those alleged eyewitnesses are, in investigators' parlance, "repeaters"—people who claim unusual experiences on multiple occasions. (Take Bigfoot hunter Roger Patterson for example. Before shooting his controversial film sequence of a hairy manbeast in 1967, Patterson was a longtime Bigfoot buff who had "discovered" the alleged creature's tracks on several occasions [Bord and Bord 1982, 80].) Ford's and Mills's multiple sightings and discoveries seem suspiciously lucky, and suspicions are increased by other evidence, including the tracks.

From Dana Holyfield I obtained a plaster copy of one of the several track casts made by her grandfather (figure 2). It is clearly not the track of a stereotypical Bigfoot (or sasquatch) whose footprints are "roughly human in design," according to anthropologist and pro-Bigfoot theorist Grover Krantz (1992, 17). Instead, Ford's monster tracks are webbed-toe imprints that appear to be "a cross between a primate and a large alligator" (Holyfield 1999a, 9). The track is also surprisingly small: only about nine and three-fourths inches long compared to Bigfoot tracks which average about fourteen to sixteen inches (Coleman and Clark 1999, 14), with tracks of twenty inches and more reported (Coleman and Huyghe 1999).[1]

Monsterlands

Clearly, the Honey Island Swamp Monster is not a Bigfoot, a fact that robs Ford's and Mills's story of any credibility it might have had from that association. Monster popularizers instead equate the Honey Island reports with other "North American 'Creatures of the Black Lagoon' cases," purported evidence of cryptozoological entities dubbed "freshwater Merbeings" (Coleman and Huyghe 1999, 39, 62). These are supposedly linked by tracks with three toes, although Ford's casts actually exhibit four (again see figure 2). In short, the alleged monster is unique, rare even among creatures whose existence is unproven and unlikely.

Footprints and other specific details aside, the Honey Island Swamp Monster seems part of a genre of mythic swamp-dwelling "beastmen" or "manimals." They include the smelly Skunk Ape and the hybrid Gatorman of the Florida Everglades and other southern swamps; the Scape Ore Swamp Lizardman of South Carolina; Momo, the Missouri Monster; and, among others, the Fouke Monster, which peeked in the window of a home in Fouke, Arkansas, one night in 1971 and set off a rash of monster sightings (Blackman 1998, 23–25, 30–33, 166–168; Bord and Bord 1982, 104–105; Coleman and Clark 1999, 224–226; Coleman and Huyghe 1999, 39, 56).

Considering this genre, we must ask: Why swamps and why monsters? Swamps represent remote, unexplored regions, which have traditionally been the domain of legendary creatures. As the noted Smithsonian Institution biologist John Napier (1973, 23) sagely observed, monsters "hail from uncharted territory: inaccessible mountains, impenetrable forests, remote Pacific islands, the depths of loch or ocean. . . . The essential element of the monster myth is remoteness."

Echoing Napier in discussing one reported Honey Island Swamp encounter, John V. Dennis (1988) states: "In many cases, sightings such as this one are inspired by traditions that go back as far as Indian days. If a region is wild and inaccessible and has a history of encounters with strange forms of life, chances are that similar encounters will occur again—or at least be reported." And while the major purported domain of Bigfoot is the Pacific northwest, Krantz (1992, 199) observes: "Many of the more persistent eastern reports come from low-lying and/or swampy lands of the lower Mississippi and other major river basins."

But why does belief in monsters persist? According to one source, monsters appear in every culture and are "born out of the unknown and nurtured by the unexplained" (Guenette and Guenette 1975). Many alleged paranormal entities appear to stem either from mankind's hopes or fears—thus are envisioned angels and demons—and some entities may evoke a range of responses. Monsters, for example, may intrigue us with their unknown aspect as well as provoke terror. We may be especially interested in man-beasts, given what psychologist Robert A. Baker (1995) observes is our strong tendency to endow things with human characteristics. Hence, angels are basically our better selves with wings; extraterrestrials are humanoids from futuristic worlds; and Bigfoot and his ilk seem linked to our evolutionary past.

Monsters may play various roles in our lives. My Cajun guide, Robbie Charbonnet, offered some interesting ideas about the Honey Island Swamp Monster and similar entities. He thought that frightening stories might have been concocted on occasion to keep outsiders away—perhaps to protect prime hunting areas or even help safeguard moonshine stills. He also theorized that such tales might have served in a sort of bogeyman fashion to frighten children from wandering into remote, dangerous areas. (Indeed he mentioned how when he was a youngster in the 1950s an uncle would tell him about a frightening figure—a sort of horror-movie type with one leg, a mutilated face, etc.—that would "get" him if he strayed into the swampy wilderness.)

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Like any such bogeyman, the Honey Island Swamp Monster is also good for gratuitous campfire chills. "A group of men were sitting around the campfire along the edge of the Pearl River," begins one narrative, "telling stories about that thing in the swamp . . ." (Holyfield 1999b). A song, "The Honey Island Swamp Monster" (written by Perry Ford, n.d.), is in a similar vein: "Late at night by a dim fire light, / You people best beware. / He's standing in the shadows, / Lurking around out there. . . ." The monster has even been referred to specifically as "The boogie man" and "that booger" (Holyfield 1992a, 14). "Booger" is a dialect form of *bogey*, and deliberately scary stories are sometimes known as "'booger' tales" (Cassidy 1985).

Suitable subjects for booger tales are numerous Louisiana swamp and bayou terrors, many of them the products of Cajun folklore. One is the Letiche, a ghoulish creature that was supposedly an abandoned, illegitimate child who was reared by alligators, and now has scaly skin, webbed hands and feet, and luminous green eyes. Then there is Jack O'Lantern, a malevolent spirit who lures humans into dangerous swampland with his mesmerizing lantern, as well as the Loup Garou (a werewolf) and the zombies (not the relatively harmless "Voodoo Zombies" but the horrific "Flesh Eaters") (Blackman 1998, 171–209).

By extension, swamp creatures are also ideal subjects for horror fiction. The Fouke monster sightings, for example, inspired the horror movie *The Legend of Boggy Creek*. That 1972 thriller became a box-office hit, spawning a sequel and many imitations. About the same time (1972) there emerged a popular comic book series titled *Swamp Thing*, featuring a metamorphosing man-monster from a Louisiana swamp. Interestingly, these popularized monsters predated the 1974 claims of Ford and Mills. (Recall that their alleged earlier encounter of 1963 had not been reported.)

The Track Makers

While swamp monsters and other man-beasts are not proven to exist, hoaxers certainly are. Take, for example, Bigfoot tracks reported by berry pickers near Mount St. Helens, Washington, in 1930. Nearly half a century later, a retired logger came forward to pose with a set of "bigfeet" that he had carved and that a friend had worn to produce the fake monster tracks (Dennett 1982). Among many similar hoaxes were at least seven perpetrated in the early 1970s by one Ray Pickens of Chehalis, Washington. He carved primitive seven-by-eighteen-inch feet and attached them to hiking boots. Pickens (1975) said he was motivated "not to fool the scientists, but to fool the monster-hunters" who he felt regarded people like him as "hicks." Other motivation, according to monster hunter Peter Byrne (1975), stems from the

"extraordinary psychology of people wanting to get their names in the paper, people wanting a little publicity, wanting to be noticed."

Were Harlan Ford's and Billy Mills's monster claims similarly motivated? Dana Holyfield (1999a, 5–6) says of her grandfather: "Harlan wasn't a man to make up something like that. He was down to earth and honest and told it the way it was and didn't care if people believed him or not." But even a basically honest person, who would not do something overtly dastardly or criminal, might engage in something that he considered relatively harmless and that would add zest to life. I believe the evidence strongly indicates that Ford and Mills did just that. To sum up, there are the men's suspiciously repeated sighting reports and alleged track discoveries, together with the incongruent mixing of a Bigfoot-type creature with most un-Bigfootlike feet, plus the fact that the proffered evidence is not only of a type that could easily be faked but often has been. In addition, the men's claims exist in a context of swamp-manimal mythology that has numerous antecedent elements in folklore and fiction. Taken together, the evidence suggests a common hoax.

Certainly, in the wake of the monster mania Ford helped inspire, much hoaxing resulted. States Holyfield (1999a, 11): "Then there were the monster impersonators who made fake bigfoot shoes and tromped through the swamp. This went on for years. Harlan didn't worry about the jokers because he knew the difference." Be that as it may, swamp-monster hoaxes—and apparent hoaxes—continue.

A few months before I arrived in Louisiana, two loggers, Earl Whitstine and Carl Dubois, reported sighting a hairy man-beast in a cypress swamp called Boggy Bayou in the central part of the state. Giant four-toed tracks and hair samples were discovered at the site, and soon others came forward to say they too had seen a similar creature. However, there were grounds for suspicion: twenty-five years earlier (i.e., not long after the 1974 Honey Island Swamp Monster reports), Whitstine's father and some friends had sawed giant foot shapes from plywood and produced fake monster tracks in the woods of a nearby parish.

Giant four-toed tracks and hair samples were discovered at the site, and soon others came forward to say they too had seen a similar creature.

On September 13, 2000, laboratory tests of the hair from the Boggy Bayou creature revealed that it was not *Gigantopithecus blacki* (a scientific name for sasquatch proposed by Krantz [1992, 193]), but much closer to *Booger louisiani* (my term for the legendary swamp bogeyman). It proved actually to be from *Equus caballus* (a horse), whereupon the local sheriff's department promptly ended its investigation (Blanchard 2000; Burdeau 2000).

Reportedly, Harlan Ford believed the swamp monsters "were probably on the verge of extinction" (Holyfield 1999a, 10). Certainly he did much to further their cause. It seems likely that—as long as there are suitably remote habitats and other essentials (such as campfires around which to tell tales, and good ol' boys looking for their fifteen-minutes of fame)—the legendary creatures will continue to proliferate.

Acknowledgments

In addition to those mentioned in the text, I am grateful to several people for their assistance: From Louisiana, William Sierichs Jr., James F. Cherry M.D., and Kenner Planetarium Director Michael Sandras; and from the Center for Inquiry, Director of Libraries Tim Binga, SKEPTICAL INQUIRER Managing Editor Ben Radford, and—for conceiving of and arranging the multi-state "southern tour" lecture series that took me to Louisiana—CSICOP Executive Director Barry Karr. Thanks again also to Ranjit Sandhu for manuscript assistance.

Note

1. Although Harlan Ford obtained tracks of various sizes, a photo of his mounted casts (Holyfield 1999a, 10) makes it possible to compare them with his open hand which touches the display and thus gives an approximate scale. This shows all are relatively small. The one I obtained from Holyfield is consistent with the larger ones.

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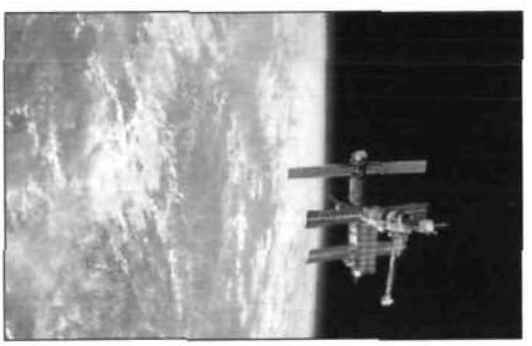
UFOs Sink Mir into the Ocean while the Alien Choir Sings On

Finally someone has figured out the *real* reason that the Russians have ditched space station Mir into the ocean: to help keep the lid on the Great *UFO Cover-up. UFOlogist Andy Lloyd* explains that "NASA and the U.S. Government want to steer clear of space tourism in a very, very big way" (www.ufos-aliens.co.uk/cosmicmir.html). Therefore, the U.S. government pressured the Russians into sinking Mir because "Space tourists are far more likely to honestly describe what they're seeing and experiencing in orbit. In other words, their presence in orbit would bring unauthorized and uncontrolled civilians into direct contact with what many of us believe is happening up there. They will tell the world about the anomalous activity that routinely seems to 'buzz' our space platforms in orbit. Perhaps they will return with photos and camcorder images. Such access to the events fleeting glimpsed on secret NASA transmissions would become a major tourist attraction, and blow the lid off the whole UFO phenomenon." Aha, now we understand!

As if this were not exciting enough, a photographer has captured on film an entire "alien choir," looking for all the world as if they were singing Christmas carols. According to Alien Abduction Experience and Research, "This photograph shows a group of six aliens standing on a garage roof in Alabama. The aliens are facing in one direction towards a hovering ball of light, from which another alien appears to be descending (see www.abduct.com/photos/pn007.htm). This September 29, 2000, photograph was taken after the witness saw a movement and heard a sound like 'humming electric lines.' Having seen and heard UFOs before, the witness knew to take a picture," which is very fortunate—had the photographer not had such keen UFO knowledge, he might have concluded that alien choirs were an everyday occurrence. The "choir" looks like a blurry photo of someone's lighted outdoor display of Christmas carolers. Unfortunately for science, "the name and address of [the] photographer are being withheld."



The Russian Space Station Mir, before it burned up returning to Earth.

Joseph Trainor's *UFO Roundup* relays a Reptoid sighting from a Mexican UFO group. Two policemen were reportedly on patrol near the thermoelectric plant in Rosarito, Baja California, at 3:17 one morning when "they saw what appeared to be a reptilian creature walking on the beach with a black suit on and with glaring red eyes." That would bring the creature quite close to the U.S. border, and it will be interesting to see if the glowing creatures being sighted throughout the Baja can pass through U.S. Customs. Unfortunately, the incident is reported to have taken place on February 29, 2001, which causes us to have some doubts about it. Trainor also tells us of some strange goings-on at Concordia College in rural Moorehead, Minnesota: "Hoyum Hall, one of the girls' dorms at Concordia, appears to be home to a colony of Reptoids." Supposedly it has been nicknamed "Reptoid Hall" because of the many creatures allegedly reported there, dating back to the 1980s, although the name "Hokum Hall" might seem more appropriate. Unlike the Mexican ETs, these creatures apparently do not glow, but they have reptilian skin, only three fingers, and like to play pranks on women in varying states of undress.

Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.

Back on Mars, the most recent "anomaly" to be reported in the Mars Online Gazette is a supposed "Manta-Wing Aircraft" that seems to have gotten itself snared in a Martian sand dune. See www.electricwarrior.com/mol/MarsOnlineGazett.htm for more information. But on Earth, Malin Space Science Systems, which operates the cameras on the Mars Global Surveyor spacecraft, has released a new set of high-resolution images of the Cydonia region, which represent all images taken thus far (see www.msss.com/mars_images/moc/01_31_01_releases/cydonia/index.html). The "Face on Mars" doesn't look anything like a face in the latest images, but that won't stop anyone from trotting out the same tired old claims.

In San Leandro, California (near Oakland), the Wizard Brewery has come up with an out-of-this-world brew—Crop Sector Ale, "the highly unusual beer made from crop circle barley." It is harvested from the fields of Alton Barnes, East Field, England, where allegedly extraterrestrial crop circles are said to turn up all the time. According to the advertising flyer, the brewer found that this malted barley possessed some remarkable properties, so he sent it off for analysis to the Malting Science Division at the University of California–Davis. Supposedly they found it was high in selenium, which when mixed with the chromium in brewer's yeast created a mix that was too strong to ferment correctly. The proportions of the mix have now been adjusted correctly to account for extraterrestrial influences, and the result is said to be that "with all the energy from the beginning of the grain through the brewing process, we know this new style ale is sure to please even the most skeptical amongst us!" I'll drink to that.

Unfortunately, knowledgeable sources are now warning that this year's tourist season for crop circle watchers may be hampered, if not eliminated, by the farmers' very legitimate concerns over foot-and-mouth disease. With this highly communicable livestock virus, capable of being carried on the shoes or clothing of unsuspecting persons, many farmers are understandably unwilling to have hordes of strangers tramping through their fields, even if they do pay a couple pounds apiece for the privilege of gawking at circles trampled out by hoaxers the night before. If this year the British economy suffers the loss of income not only from raising cattle, but from crop circle tourism as well, it will be a serious blow indeed.

In Scotland, the town of Bonnybridge is a local UFO hotspot, claiming more UFO sightings than anywhere else in the world (a claim that many other localities would no doubt contest). Local councilman Billy Buchanan knows a good thing when he sees it, and the BBC has reported on his plans to set up Bonnybridge as a sister city to Roswell, New Mexico (see http://news.bbc.co.uk/hi/english/uk/scotland/newsid_1022000/1022712.stm). "We in Bonnybridge have an affinity with Roswell, and the common denominator is UFOs," he said. "The cultural, tourist, social and economic advantages would be tremendous for the area." He also said that an Anglo-American company was planning to visit the area to present plans for a £20 million UFO-related theme park. Apparently dear old Nessie hasn't been bringing in enough tourists of late, and Mr. Buchanan has great hopes that UFOs may reverse Scotland's tourist decline: "There has been a lot of discussion lately about the tourism situation in Scotland and how it is diminishing with the established tourist sights that we have. We have got to move forward and regenerate and I think this could be the way forward for a theme scenario in the central belt of Scotland."

Meanwhile, UFOlogist Karl Pflock has an article in the January 2001 *Fortean Times* noting how certain descriptive elements in Travis Walton's "classic" UFO abduction story from 1975 (made famous by the movie *Fire in the Sky*) appear to have been borrowed heavily from Robert Heinlein's equally "classic" science fiction novelette Universe, first published in 1941 and widely reprinted since then. In *The Travis Walton Experience*, the celebrated abductee tells of breaking free from his captors after his examination and exploring the saucer. Walton claims to have found "a round room" that appeared to be the ship's control room, in which he sat down at a high-backed chair with controls built into its arms. Then he saw the ship's walls seem to fade away, and found himself apparently sitting out in the middle of space. In Heinlein's description, a "spherical room" contained chairs with "high supporting sides, or arms" having controls built into them. When the protagonist sat in them, "the mirrored stars looked down on him . . . he hung alone in the center of the stellar universe." Pflock lists quite a number of parallels between the two accounts, which seems to quite definitely show that Walton "borrowed" at least part of his spaceship narrative from Heinlein. The primary difference in these two accounts would seem to be that Heinlein freely admitted that his story was fiction. Pflock corresponded with Walton on a number of issues, and found him more than willing to answer questions about other aspects of his supposed "abduction," but Walton refused all comment on the Heinlein similarities.

* * *

UFOlogists have long cited Officer Lonnie Zamora's report of a landed vehicle and occupants in Socorro, New Mexico, on April 24, 1964, as among the very strongest pieces of UFO evidence. The local police officer was chasing a speeder when he reports that he heard a loud roar, then saw a flame in the sky, which was difficult to see because he was looking toward the Sun. Catching a glimpse of the landed object in the gaps between some small hills, Zamora claims to have seen two beings in garb resembling white coveralls who presumably scampered back into their vehicle, which he observed taking off. The object reportedly left behind some irregularly-spaced indentations in the ground, and scorched shrubbery. Skeptics have long suggested that the incident was a hoax, intended to bring tourists into town, a suggestion bolstered by the way that the New Mexican towns of Roswell and Aztec are today successfully milking dubious UFO tales. Now UFO skeptic Larry Robinson, Systems/Applications Programmer at Indiana University, has suggested the intriguing possibility that what Zamora saw, and reported

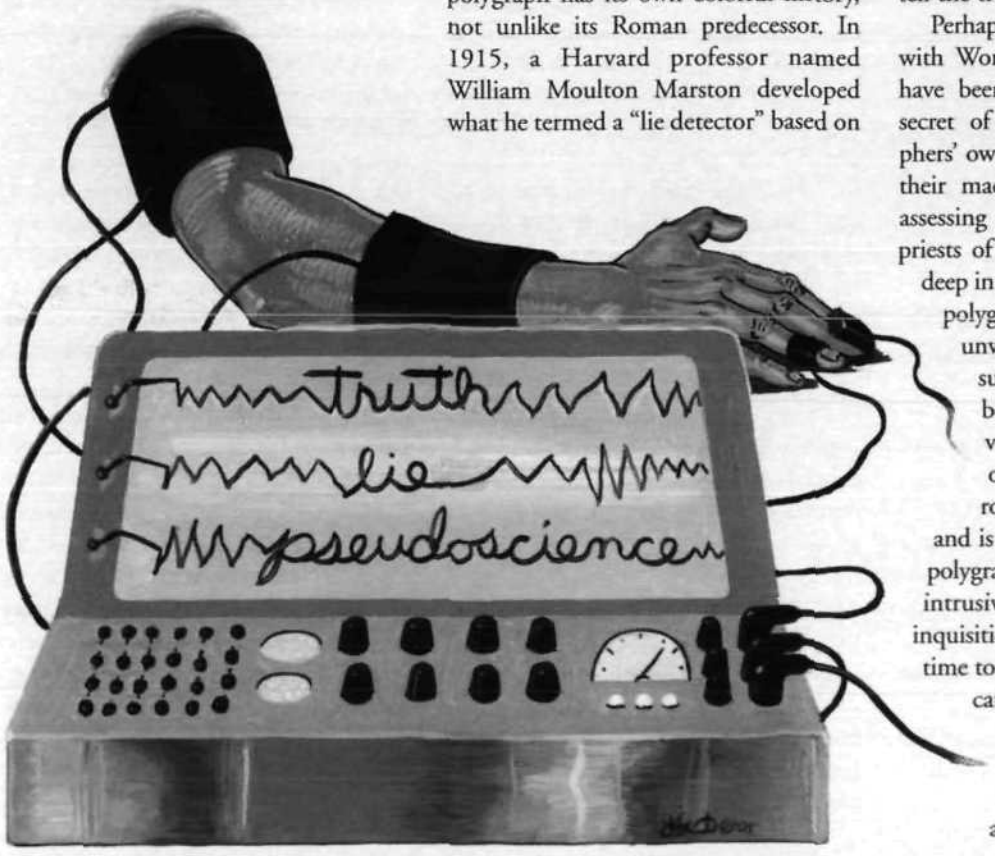
PSYCHIC VIBRATIONS
Continued on page 62

Polygraphs and the National Labs: Dangerous Ruse Undermines National Security

ALAN P. ZELICOFF

In ancient Rome, emperors would divine truth by reading the entrails of animals or vanquished foes. The twists and turns of the digestive guts held secrets that only "experts" could see. No self-respecting general would take his legions into battle before seeking the wisdom of the shamans who predicted the battle's outcome from the appearance of the intestines of chickens and men. It was a brutal approach, and not at all effective. In the end, we all know what happened to the Roman Empire.

Today, under the mandate of the Congress and in the name of "national security," the U.S. Department of Energy (DOE) is using much the same technique with a little box wired to unwary subjects: the polygraph. The polygraph has its own colorful history, not unlike its Roman predecessor. In 1915, a Harvard professor named William Moulton Marston developed what he termed a "lie detector" based on measurements of blood pressure. A few other bells and whistles were added over time, but for all intents and purposes the polygraph has remained unchanged over the past eighty-five years. Marston went on to gain fame not as the inventor of the polygraph, but from the cartoon character he created: Wonder Woman, who snapped a magic lasso that corralled evildoers and forced them to tell the truth.



Perhaps polygraphers would do better with Wonder Woman's lasso than they have been doing with their box. The secret of the polygraph—the polygraphers' own shameless deception—is that their machine is no more capable of assessing truth telling than were the priests of ancient Rome standing knee-deep in chicken parts. Nonetheless, the polygrapher tries to persuade the unwitting subject that their measurements indicate when a lie is being told. The subject, nervously strapped in a chair, is often convinced by the aura surrounding this cheap parlor trick, and is then putty in the hands of the polygrapher, who launches into an intrusive, illegal, and wide-ranging inquisition. The subject is told, from time to time, that the machine is indicating "deception" (it isn't, of course), and he is continuously urged to "clarify" his answers, by providing more and more personal information.

At some point (it's completely arbitrary and up to the judgment of the polygrapher), the test is stopped and the polygrapher renders a subjective assessment of "deceptive response." Even J. Edgar Hoover knew this was senseless. He banned the polygraph test from within the ranks of the FBI as a waste of time.

Every first-year medical student knows that the four parameters measured during a polygraph—blood pressure, pulse, sweat production, and breathing rate—are affected by an uncountable myriad of emotions: joy, hate, elation, sadness, anxiety, depression, and so forth. But, there is not one chapter—not one—in any medical text that associates these quantities in any way with an individual's intent to deceive. More important, dozens of studies over the past twenty years conducted in psychology departments and medical schools all over the world have shown that the polygraph cannot distinguish between truth-telling and lying. Despite testimonials from polygraphers, no evidence exists that they can find spies with their mystical box. Indeed, their track record is miserable: Aldrich Ames and the Walker brothers, unquestionably among the most damaging of moles within the intelligence community, all passed their polygraphs—repeatedly—every five years.

The truth is this: The polygraph is a ruse, carefully constructed as a tool of intimidation, and used as an excuse to conduct an illegal inquisition under psychologically and physically unpleasant circumstances. Spies know how to beat it, and no court in the land permits submission of polygraphs, even to exonerate the accused.

Many innocent people have had their lives and careers ruined by thoughtless interrogation initiated during polygraphy. David King, a twenty-year Navy veteran suspected of selling classified information, was held in prison for 500 days and subjected to multiple polygraphs, many lasting as long as nineteen hours. A military judge dismissed all evidence against him. Mark Mullah, a career FBI agent, was the subject of a massive, nighttime surprise search of his home, followed by a review of every financial record, appointment book, personal calendar, daily "to-do" list, personal diary, and piece of correspondence—all as a result of a "positive" polygraph test. He was then placed under surveillance around the clock, and was followed by aircraft as he moved about during the day. Nothing was ever proved, and his FBI badge was restored, without apologies. But his career was destroyed, and he was never again above suspicion, all because a polygrapher—with eighty hours of "training"—asserted that he had lied. Even barbers must have 1,000 hours of schooling before earning a license to cut hair.

And yet the polygraph is one of the major tools in the new DOE program to bolster security at the nation's nuclear weapons labs: Sandia, Los Alamos, and Lawrence Livermore. In the wake of the Wen Ho Lee debacle in 1999, bureaucratic Washington, in search of a "quick fix," made the classic bureaucratic mistake: doing something first, and thinking later. It was the high point of the election cycle, and then-Energy Secretary Bill Richardson was hoping to be nominated as the Democratic vice-presidential candidate. But Richardson, reeling from massive cost-overruns on a gigantic laser project in Livermore, calculated that he needed to show toughness rather than intelligence. Instead of doing the difficult but correct thing—reinstating guards at entry points into the Labs that had been eliminated by his predecessor Hazel O'Leary—Richardson elected to recommend a widespread, screening polygraph program throughout the DOE. Congress went along, and real security was sacrificed on the altar of politics.

The response among the scientific staff at the Labs was universal and united: polygraphs should be avoided at all costs because they *undermine* national security. The scientists reasoned as follows: first, polygraphs create a false sense of security. As the Aldrich Ames scandal showed so clearly, even when repeated many times, polygraphs are incapable of ferreting out spies. Second, polygraphs would drain enormous resources from sensible security measures and replace them with a feckless deterrent. And finally, polygraphs would demoralize staff, and threaten the vital work of guaranteeing the safety and reliability of nuclear weapons.

After days of official hearings before polygraphs became official policy, neither the DOE nor the Congress paid any attention to the scientists' concerns. Each of the predictions has come to pass. Wen Ho Lee passed, then failed, then again passed a polygraph, and his polygraphers (both of whom are still working for the DOE) disagree to this day on his veracity. The DOE polygraph program has wasted millions of dollars during the past six months, and will squander $10 million more before the first phase of testing is finished. And, most disturbing of all, the majority of Sandia engineers and scientists who service nuclear weapons in the field have refused to take the test, and the DOE is suddenly without authorized staff to deal with a nuclear weapons emergency. Recruitment of new scientists to this program and to the Labs in general has become nearly impossible. The Laboratories' leaders are learning that no one feels valued if they are presumed guilty until "proven" innocent by a disreputable test.

But the damage and foolishness doesn't stop there. The DOE has run roughshod over the sensibilities of scientists through a continuous series of distortions over implementation of polygraphs. For example, DOE polygraphers claim that there are but four questions to the examination, all directly related to national security. This is a lie. In each and every polygraph exam, the subject will invariably be told something like

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this: "You've done pretty well, but there is a problem here with question number 3. Is there something you were thinking or worried about that you would like to get off your chest before we continue?" This isn't directed questioning; it is a fishing expedition, and has no place among loyal scientists nor in civil society.

Further, during the public hearings, polygraphers admitted that there was no scientific evidence that medical conditions (such as diabetes, high blood pressure, or heart disease) affected the outcome of the polygraph. Yet, they still insist that each subject provide a list of all prescription medications and a complete history of medical conditions. The reason they do so is to maintain the aura of the magical polygraph: "We need to know about medications," said David Renzelman, chief of the DOE polygraph program, "so we can adjust our machine and our readings." Really? I must have slept through that lecture in medical school.

But things are changing. At the recommendation of Sandia National Laboratories' chief medical officer, who has determined that polygraphs are a risk to the health and safety of employees, President C. Paul Robinson has informed the DOE that intrusive medical questions will stop, or he will instruct Sandians not to take the polygraph. This principled action may precipitate Congressional hearings—long avoided by polygraphers—which could finally reveal the truth about the polygraphs grave effects on national security.

Protecting secrets is a challenging task. Spies, particularly those operating within the national security establishment, are very difficult to find. But certainly we should not make their task easier with measures like the polygraph that are, in the end, self-defeating. The scientists at the national laboratories are willing to sacrifice some of their constitutional protections for meaningful benefits to security, but they are unwilling to do so for nonsense. It is time to relegate the polygraph—the fanciful creation of a comic book writer—to the ash heap of bad ideas and misplaced belief. □

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GENERAL AGENDA

1. The Social Value and Status of Science
2. Science and Antiscience: The New Lines of Confrontation
3. Paranormal Beliefs: The Threat to Science and Human Dignity
4. Science, Education, and Religion

WEDNESDAY, OCTOBER 3 - *Opening Plenary Session*

- Why Is Antiscience Dangerous?
- Science and the New Skepticism
- The Incompatibility of Science and Religion
- Science and Humanism: The Life-Affirmation Tandem
- The Appeal of the Paranormal and the Psychology of Belief
- The Expansion of Irrationalism in Russia
- The Sources of Pseudoscience in Biology and Medicine
- Parapsychology: Science, Antiscience, Pseudoscience, or Non-Science?
- Organized Pseudoscience as a Form of the Disintegration of Society
- The Age of Scientific Misinformation: The Sources of Mass-Media Bias
- Parapsychology under Russian-Market Conditions

THURSDAY, OCTOBER 4 - *Concurrent Sessions*

- The Social Value and Status of Contemporary Science
- *Science and Antiscience: The New Lines of Confrontation*
- Paranormal Beliefs: the Growing Threat to Reason and Human Dignity
- Roundtable
- Science, Education, and Religion

FRIDAY, OCTOBER 5 - *Closing Plenary Sessions*

- The Religious Situation in Russia Today
- Roswell, UFOs, and Space-Age Antiscience
- Astronomy and Astrology: The Unexpected Reversal in the Confrontation
- The New Atheist Movement in Russia
- Organized Humanism versus Charlatanism

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The conference will be held at the New Building of the Russian Academy of Sciences, 117334 Moscow, Leninskii prospekt, 32a.

Special accommodation rates for conference attendees are available from the Hotel Orlyonok, Leninskii prospect.

Confronting Veterinary Medical Nonsense

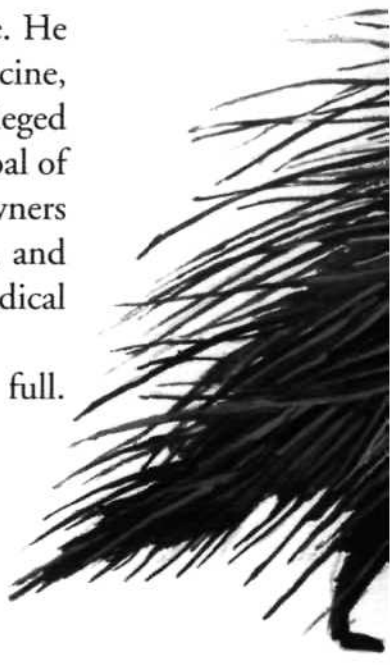
A Report from the Trenches

In veterinary medicine, as in human medicine, people now find themselves besieged with dubious claims for a variety of therapies.

ROBERT IMRIE, DVM

In October of 1997, William Jarvis, president of the National Council for Reliable Health Information (NCRHI), asked me to establish a veterinary task force to deal with the issues of unproven therapeutic claims, critical thinking, and pseudoscience in veterinary medicine. He was responding to an obvious need. In veterinary medicine, as in human medicine, people now find themselves besieged with dubious claims for a variety of therapies. It's the goal of the NCRHI Veterinary Task Force to help animal owners and veterinarians understand what they are being told, and to help keep them from drowning in a vast sea of medical misinformation.

From the outset the Task Force has had its hands full.



In order to try to reach as many people as efficiently as possible, our first goal was to start a Web site titled the "Alt Med Advisory Page." Later we added the "Entirely On-Line Alt Med Primer" and then the "Alt Med Book Review Page." This Web site has been successful beyond all expectation, even winning acclaim from *USA Today Weekend Edition.*

But our efforts haven't stopped there. We've also lobbied vigorously and successfully to have the notoriously uncritical 1996 American Veterinary Medical Association's Alternative Medicine Guidelines re-evaluated. Various members and supporters have published critical letters to the editors of U.S. and Canadian veterinary journals, often in response to featured articles by proponents of unproven therapies that have extolled the virtues of such at-best-unproven modalities as veterinary homeopathy, chiropractic, acupuncture, "energy therapy," and herbalism. Others have broken new ground by writing and publishing articles and books critically evaluating "alternative" veterinary medical claims. Task Force equine advisor Dave Ramey, DVM, has lectured on these subjects at veterinary schools across the country.

Yet another Task Force goal has been to provide sound information to veterinary practitioners and academicians. This past year our organization (with financial support from CSICOP, SKEPTICAL INQUIRER, and other concerned parties) has begun to offer scientifically accurate, fact-based information regarding unproven "alternative" therapies at major veterinary conferences across the United States.

The American College of Veterinary Internal Medicine Conference

Our first target was the May 2000 annual conference of the American College of Veterinary Internal Medicine (ACVIM) in Seattle, Washington. Dave Ramey and I were allowed to set up a small "educational display table" near the registration area. Though our table was far from the main exhibitor's area, we attracted a great deal of positive attention and support from attending veterinarians, academicians, and veterinary internists. Our material proved more popular than anticipated and keeping up with the demand for additional copies of the various handouts we were distributing became a welcome problem.

The ACVIM is the organization that represents what one would hope to be among the "best and the brightest" among practitioners of veterinary internal medicine (i.e., veterinary "internists"). One might reasonably expect that medical

pseudoscience would be afforded short shrift at a convention of board certified specialists in veterinary internal medicine. Unfortunately, while the quality and scientific rigor of the formal presentations seems to have been generally high, the information presented by some commercial exhibitors at the conference was less impressive.

For example, a company called NaturalHealingDoctor operated a commercial exhibit at the conference. A visit to NaturalHealingDoctor's Web site at www.naturalhealingdoctor.com/cgi-bin/nhd.storefront sheds light on the nature of the company and the "therapies" they sell to veterinarians and the pet-owning public. Their promotional material explains that "NaturalHealingDoctor sells suggested remedies for over 100 human and thirty pet ailments. Naturopathic or Ayurvedic Doctors and Veterinarians have developed these suggested remedies."

One of the "ailments" Natural HealingDoctor claims to treat is "aggression." They claim that "Pets can become aggressive towards their owners, strangers, and other animals. [...] At times, this aggression is bred into the animal. Other factors can be physiological, such as negative reaction to vaccinations, blood sugar level, virus, and inflamed nervous system. No matter the cause, many of these can be helped by herbal medicine."

Task Force equine advisor Dave Ramsey, DVM, discusses alternative therapeutic claims with a concerned veterinary academician at a veterinary conference.

The claims may sound persuasive, but they fall apart under scrutiny. "Inflamed nervous system"? "No matter the cause"? This sounds like the pitch for a nineteenth-century patent medical nostrum. In fact, that's essentially what it is. It's also alarming to see phrases like "negative reactions to vaccination" pop up in the veterinary field. Naturopaths, homeopaths, some chiropractors, and various other nonscientific medical practitioners sometimes claim that vaccines cause a wide range of maladies and refer to the "problem" as "vaccinosis." However, while serious adverse reactions to vaccination do occasionally occur, there is no scientific data supporting the existence of widespread vaccine-related disease entities. The fact is that vaccination and the provision of clean drinking water are the two most effective enhancements to public health (human and animal) of all time. Vaccination over the last century has, without a doubt, saved many hundreds of millions of animal and human lives. The same cannot be said of any herbal therapy.

Herbal remedies, when effective, are merely crude drugs. Drugs, of course, may have side effects, and pharmaceutical companies generally take great pains to list them. Such caution is not evident in the veterinary herbal field. For example, for just $41.35, NaturalHealingDoctor will sell you their remedy for the "ailment of aggression." This consists of 6.7 oz. of extract of German chamomile, valerian, scullcap, and passion flower in water, alcohol, and glycerine. The company offers no warning about giving this remedy to pregnant animals, even though scullcap has been shown to cause birth defects when administered orally to pregnant rats (Kim 1993). When it comes to alternative medicine, "caveat emptor" seems to be the order of the day.

As is the case with most "alternative" approaches (and in contrast to the claims that "alternative" medicine treats the "whole" patient), treatment seems to be directed primarily at symptoms, rather than disease. This oversight can have serious consequences. For example, NaturalHealingDoctor advises that dogs presenting with "liquid bowel movements, stools with mucous or catarrh, blood in stools, electrolyte and fluid loss, and dehydration" be treated with extract of "barberry, mullein, bayberry, myrrh, thyme, German chamomile, peony root, ginger, Oregon grape, in glycerin." What the company fails to mention is that bloody liquid diarrhea in dogs, accompanied by dehydration and depression, are the hallmarks of the common and often lethal disease canine parvoviral enteritis. The first thing the owner of a dog so afflicted urgently needs is not an unproven "herbal remedy," but an accurate diagnosis and immediate intervention by a competent veterinarian followed by round-the-clock intensive care, including intravenous fluids, antibiotics, and nutrient support. The sooner such supportive therapy is instituted, the higher the survival rate—and, with early diagnosis and intensive care, the survival rate for parvoviral enteritis is generally quite high.

NaturalHealingDoctor fails to even mention the *possibility* that such clinical signs might suggest parvoviral enteritis. Nor do they even suggest that a dog with such signs should be examined by a veterinarian. Telling consumers that some herbal nostrum should be given in the face of such clinical signs will almost certainly delay accurate diagnosis and implementation of appropriate life-saving therapy, and therefore cost patient lives.

Fortunately, most of the presentations at the ACVIM conference were based on sound science and good medicine. However, in a presentation titled "Alternative approaches to the treatment of epilepsy," internist Karen R. Muñana, DVM, MS, told her audience, "The first report of epilepsy in traditional Chinese medicine appeared in a publication written by a group of physicians between 770 and 221 B.C. Since then, the use of acupuncture to treat epileptic seizures has been described in both humans and in animals."

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Unfortunately, such comments, though common, appear to be made with little concern for either their historical or clinical accuracy. In the first place, epilepsy is not a traditional Chinese medical diagnosis. Second, the *Huangdi neijing*, the collection of ancient Chinese documents to which Muñana refers, can't be reliably dated to earlier than the fifth century A.D. More important, there is no evidence that the ancient Chinese medically treated dogs or cats at all (Despeux 1981). Finally, neither acupuncture points nor meridians have been shown to exist.

In spite of such inaccuracies, one might still hold the possibility that needling is an effective therapy for epilepsy. Unfortunately, even that assertion can't be supported. While Muñana also stated that "the mechanism by which acupuncture controls seizures is not completely understood," the only randomized controlled study ever undertaken to establish the efficacy of acupuncture in the treatment of epilepsy in humans was "unable to document a beneficial effect" (Kloster et al. 1999). No such controlled study involving animals has ever been conducted.

Examining the "data" that was provided is perhaps even more illustrative. Support for acupuncture in the treatment of epilepsy came in the form of two small and uncontrolled studies wherein gold beads were surgically implanted at "acupuncture points" in dogs concurrently receiving anticonvulsant drugs (this was not acupuncture). One of these studies involved only five subjects, eliminating the possibility of a statistically significant result. However, while all five dogs apparently experienced an initial decrease in seizure frequency, two subsequently experienced an *increase* in seizure frequency. The other uncontrolled canine study involved forty dogs and concluded that "50% of dogs were able to be taken off all anticonvulsant medication ... without the risk of further seizure episodes *unless the dog was stressed.*" (That is, when these dogs that "no longer needed anticonvulsants" continued to have seizures, it was apparently not viewed as evidence that the "gold beads" didn't work, but that stress was to blame for the seizures.) An apparent optimist, Muñana concluded: "Nonetheless, the positive response reported in these studies suggests that this form of therapy may be of use in patients for which satisfactory results cannot be obtained with anticonvulsants alone." That's a pretty big "may."

American Veterinary Medical Association

In July 2000, Dave Ramey and I traveled to Salt Lake City, Utah, to offer educational material at the annual conference of the American Veterinary Medical Association (AVMA). The

The Fallacy of 'Traditional Chinese' Veterinary Acupuncture

Over the last thirty years, veterinary acupuncture proponents have repeatedly claimed or implied that the ancient Chinese applied acupuncture to various animal species, (including dogs and cats), and that the practice is described in the ancient Chinese veterinary literature. On the other hand, they never directly cite any of the ancient Chinese veterinary literature to support such claims.

Recently, Veterinary Task Force members commissioned *what appears to be the first-time-ever translation into* English of key selections from the various ancient Chinese veterinary texts in question, including the seventeenth-century *Yuan Heng liaoma ji* (*Yuan and Heng's Recipe for Treating Horses*), the fourteenth-century *Simu anji ji* (*The Herdman's Pacification of Horses Collections for the Pacification of Stallions*), and the sections covering large animal veterinary medicine from the sixth-century agricultural manual *Quimin Yaoushu* (*Essential Arts for Assisting the People*), the earliest recipes of their kind.

None of the early Chinese veterinary texts deal with the treatment of dogs or cats at all. Animals covered include horses, donkeys, asses, cattle, camels, pigs, goats, and sheep, with the most extensive tradition covering the larger species. The manuals covering the horse are typical of the tradition and none of them refer to anything that might reasonably be construed as acupuncture in the modern sense. *The Yuan Heng liaoma ji* even quotes the earlier *Simu Anji ji* to explain not only why horses don't have acupuncture points equivalent to those in humans, but why human medical practices, including acupuncture, may not be appropriate to the treatment of animals (cited from Guo Huaixi, *Xinke zhushi ma niu to jing da quan ji*. (*Newly printed annotated great collection of horse, ox, and camel classics*, Beijing: Nongye chuban she, 1988 [orig. 1785], 40):

> Dongxi said: "[. . .] The needling depressions for horses are not the same as those of humans. Why?" Qu Chuan said: "The human is the divine element among the myriad things. Humans avail of the great movement of *Yin* and *Yang*. They receive the choicest aspects of Heaven and Earth. Their bodies are the proper way of the Five Elements. They receive the primeval influences and become replete and fertile. [. . .] Now, as for animals, they are things. They avail of the partial movement of *Yin* and *Yang*. They receive the excess essence of Heaven and Earth and receive the insufficiency of the Five Elements."

So, in the eyes of traditional Chinese medicine, animals are mere "things," and are fundamentally different from human beings. According to these ancient texts, the "depressions"—which modern proponents have interpreted as acupuncture points—are quite different from the acupuncture points found in people.

It's important to note that, in these ancient texts, the word *zhen*, which is usually translated as "needling," applies to an extremely wide variety of interventions involving sharp and/or heated instruments. The word certainly does not necessarily imply the insertion and manipulation of fine needles. To the contrary, it's clear from a careful reading of the texts that the "depressions" described are sites where therapeutic phlebotomy (bloodletting), scarification, cautery, and even minor surgical procedures are to be undertaken. These texts, in fact, make no clear reference to the insertion and manipulation of fine needles at all.

conference was attended by some 7,000 veterinarians, making it one of the largest annual veterinary conferences in the world.

In contrast to the ACVIM conference, the AVMA "exhibitor's area" was a veritable hotbed of "alternative" medical promotion and sales. ANTECH Diagnostics, one of the nation's largest veterinary diagnostic laboratories, was promoting something called BioNutritional Analysis, whereby veterinarians are enticed to submit blood samples from perfectly normal animals with entirely normal blood chemistry profiles, along with a filled-out "questionnaire," in order to determine the "exact blend of homeopathics, nutriceuticals, and supplements" required to engender optimum health and performance in said normal animals. Thorne Research, a nutritional supplement manufacturer, was handing out literature advocating the extraction of all amalgam fillings from people's mouths. At the Friskies/Alpo booth they were pitching dog food containing "whole natural chickory root" as an aid to digestion. Various publishers throughout the hall were selling books dealing with everything from veterinary acupuncture to herbal therapies for pets.

Veterinarian Dave Ramsey discusses the toxicological implications of "herbal therapies for animals" with concerned veterinary pathologist Sharon Gwaltney, DVM, PhD.

Perhaps because its emphasis is on general information, unlike the ACVIM conference, the AVMA convention featured an entire program section devoted to unproven and disproved alternative veterinary therapies. These lectures consisted entirely of "how to" information, and were devoid of any critical assessment of the therapies in question. (Nonetheless, attending these sessions did qualify veterinarians for "continuing medical education" in the eyes of state veterinary licensing boards across the country.)

For example, Sheryl Schwartz, DVM, author of *Four Paws, Five Directions*, a text promoting the application of acupuncture and traditional Chinese medicine to dogs and cats, offered a lecture titled "A traditional Chinese medical approach to hip dysplasia" (Schwartz 2000). Her presentation, in essence, dealt with a "traditional Chinese medical approach" to a disease traditionally unrecognized by Chinese medicine in a species that, traditionally, the Chinese did not treat. Most of the Chinese medical "theory" she presented was apparently taken directly from the human Traditional Chinese Medicine (TCM) literature—a process the ancient Chinese specifically advised against (Guo).

Schwartz described acupuncture meridians as "energy pathways that travel close to the surface and in the muscle layers and include aspects of the nervous and circulatory systems, as well as an individual's vitality or *qi*." This sort of historical endorsement, though common, is simply nonsense. In fact, the term "acupuncture meridian" was coined in the late 1930s by Georges Soulié de Morant, a French diplomat in China who was fascinated by acupuncture as a cure for cholera (Soulié de Morant [1939] 1994). Soulié de Morant was also the first person to describe *qi* as energy. (The ancient Chinese referred to "conduits" or "conduit vessels," and the earliest such references are clearly to blood vessels. The classical Chinese characters for *qi* describe "vapor rising from food" rather than "energy," a definition remarkably similar to ideas proposed by the ancient Greeks.) Of course, there is no compelling scientific evidence that either acupuncture points or meridians exist in humans or any other species.

To her credit, Schwartz never claimed that acupuncture has been proven effective in the treatment of canine hip dysplasia (CHD), only that it "may be used" to treat the condition and that needling certain points has personally offered her "good results" over the last twenty years. While there are no controlled clinical trials investigating the efficacy of acupuncture in dogs with CHD, there are many well-designed, controlled studies showing that acupuncture is ineffective in the treatment of osteoarthritic conditions in humans (see www.seanet.com/-vettf/Medline2.htm). There is no reason to expect it to be more effective in other species.

Unfortunately, veterinary pseudoscience at the AVMA conference was not limited to anecdotal assertions about putative Chinese therapies. Schwartz offered yet another presentation, this one titled "Introduction and clinical indications for homeopathy." She began her presentation with the assertion that homeopathy is a "natural pharmaceutical science." The fact is that it's neither natural (since homeopathic solutions don't occur in nature), nor pharmaceutical (since homeopathic remedies contain nothing other than water, and perhaps a little alcohol or lactose, none of which have documented therapeutic qualities pertinent to the conditions for which homeopaths prescribe them). Neither is homeopathy a science, since it violates several well-established scientific principles and is supported by none.

Nor is there any good evidence that homeopathy is effective for the treatment of anything. In recent decades, a number of controlled clinical trials have been conducted to study the efficacy of homeopathy in humans. A recent meta-analysis of these studies (conducted by homeopathy proponents) concluded that "we found insufficient evidence from these studies that homeopathy is clearly efficacious for any single clinical condition" (Linde 1997). There are, in fact, no controlled clinical trials of homeopathy in animals.

Schwartz went on to make the following self-contradicting statements: "It [homeopathy] is based on a set of symptoms that a particular patient expresses, rather than the name of a

disease. In treatment, homeopathy seeks to cure the patient, not the disease."

While there's no evidence that homeopathic water has ever successfully cured any disease, it seems absurd to claim that a therapy strictly devoted to the suppression of symptoms "seeks to cure the patient." Incredibly, the homeopaths who make such claims seem to believe that diseases are nothing more than collections of symptoms.

In explaining to her audience how homeopathic remedies are manufactured, Schwartz mentioned that they contain only "minute doses" of the substances on the label. In fact, many if not most homeopathic remedies contain not a single molecule of the ingredient on the label. While no known physical process seems remotely likely to account for such a process, homeopaths claim that the water has somehow been induced to "remember" the former presence of now absent solute molecules. Schwartz explained that, as the remedy is repeatedly diluted either one part solute to nine parts of solvent or one part solute to ninety-nine parts of solvent, it is "dynamatized" by means of "succussion"—i.e., by shaking the container against a table top or palm, or by means of a shaking machine. In her lecture notes, she states:

Herbs for Pets, a best seller at a veterinary medical convention.

> The succussion manipulates and releases energy molecules [*sic*] into solution, thereby activating the medicine. [...] The vital energy liberated during the process is what appears to be responsible for its actions and interactions with the individual. The single remedy where the patient's individual history is assessed to determine her essence and then is matched with the essence of a particular natural substance [*sic*]. The single remedy includes the totality of the patient's symptoms and is extremely individualized. The single remedy is what is known as the simillimum.

If SKEPTICAL INQUIRER readers find this prose impenetrable, I'm afraid I can't offer any help.

Not only are some veterinarians asserting claims for expertise in ancient Chinese traditions and discredited eighteenth-century whimsy, they're claiming to be chiropractors, too. In that regard, veterinarian and chiropractor Kevin Haussler (of the Department of Biomedical Sciences, College of Veterinary Medicine, Cornell University) offered two lectures on "veterinary chiropractic." In the published notes for his lectures (Haussler 2000), Haussler assures readers that "chiropractic is a complementary modality that can be used in veterinary medicine for the diagnosis and treatment of select musculoskeletal disorders." Unfortunately, not once in either presentation does he note exactly which musculoskeletal disorders in animals he feels may be effectively diagnosed and/or treated by means of chiropractic manipulation. Also, it's unclear how he might have decided this issue, since no controlled clinical trials involving veterinary chiropractic have ever been conducted. In humans, investigators have concluded that "we don't know whether it [chiropractic] does more good than harm" (Ernst 1998). Haussler does concede, however, that chiropractic is not a "cure-all." Of course, the real issue is whether or not chiropractic, human or veterinary, is a "cure-anything."

The Continuing Effort

While proponents of unproven and disproved "alternative and complementary" veterinary therapies have done little to scientifically investigate or validate their claims over the years, they've worked tirelessly to promote them by whatever nonscientific means available. This process has been going on now for almost three decades. Some U.S. veterinary schools currently offer "elective" courses dealing with acupuncture, homeopathy, chiropractic, herbalism, "energy therapy," and other "alternative" modalities. While the NCRHI Veterinary Task Force strongly supports the critical examination of "alternative" therapeutic claims in veterinary classrooms, the courses in question appear to universally involve only uncritical "how-to" instruction presented by proponents of such therapies and based on highly inaccurate advocate literature.

The Veterinary Task Force intends to continue to offer "a candle in the alternative medicine dark" at major veterinary conferences across the country. We need your help. Those interested in learning more about our organization, or contributing to our effort, should visit our Web site at www.seanet.com/~vettf/.

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AVMA Revises Guidelines Toward Greater Rationality

The National Council for Reliable Health Information Veterinary Task Force has, from its inception, taken a very proactive stance with regard to having the American Veterinary Medical Association (AVMA) re-evaluate the egregiously "promotional" 1996 AVMA Guidelines for Alternative and Complementary Veterinary Medicine. An intensive letter-writing campaign to this end was mounted early in 1998, and Task Force member and equine advisor Dave Ramey, DVM, was eventually able to win a seat on the nine-practitioner AVMA committee seated in 1999 to re-evaluate same. The result was accepted by the Executive Board of the AVMA April 9, 2001. The original and highly "alt med promotional" 1996 alternative veterinarian medical guidelines are available online at www.seanet.com/~vettf/Guidelines.htm. The new, and vastly more rational, 2001 guidelines appear, verbatim, below.

—Robert Imrie

Guidelines for Complementary and Alternative Veterinary Medicine

Introduction

These guidelines are intended to help veterinarians make informed and judicious decisions regarding medical approaches known by several terms including "complementary," "alternative," and "integrative." Collectively, these approaches have been described as Complementary and Alternative Veterinary Medicine (CAVM). The AVMA recognizes the interest in and use of these modalities and is open to their consideration.

The AVMA believes that all veterinary medicine, including CAVM, should be held to the same standards. Claims for safety and effectiveness ultimately should be proven by the scientific method. Circumstances commonly require that veterinarians extrapolate information when formulating a course of therapy. Veterinarians should exercise caution in such circumstances. Practices and philosophies that are ineffective or unsafe should be discarded.

Terminology

The identification of standard and broadly accepted definitions applicable to CAVM, including the definition of CAVM itself, is challenging. These guidelines identify CAVM as a heterogeneous group of preventive, diagnostic, and therapeutic philosophies and practices. The theoretical bases and techniques of CAVM may diverge from veterinary medicine routinely taught in North American veterinary medical schools or may differ from current scientific knowledge, or both. It is not the intent of these guidelines to determine or describe the relative value of the individual modalities. The evidence pertaining to, and the practice of, individual CAVM modalities differ. Current examples of CAVM include, but are not limited to, aromatherapy; Bach flower remedy therapy; energy therapy; low-energy photon therapy; magnetic field therapy; orthomolecular therapy; veterinary acupuncture, acutherapy, and acupressure; veterinary homeopathy; veterinary manual or manipulative therapy (similar to osteopathy, chiropractic, or physical medicine and therapy); veterinary nutraceutical therapy; and veterinary phytotherapy.

Education, Training, and Certification

The AVMA believes veterinarians should ensure that they have the requisite skills and knowledge for any treatment modality they may consider using. The AVMA does not officially recognize diplomate-status or certificates other than those awarded by veterinary specialty organizations that are members of the AVMA American Board of Veterinary Specialties (ABVS), nor has it evaluated the training or education programs of other entities that provide such certificates. Recognition of a veterinary specialty organization by the AVMA requires demonstration of a substantial body of scientific knowledge. The AVMA encourages CAVM organizations to demonstrate such a body of knowledge.

Recommendations for Patient Care

The foremost objective in veterinary medicine is patient welfare. Ideally, sound veterinary medicine is effective, safe, proven, and holistic in that it considers all aspects of the animal patient in the context of its environment.

Diagnosis should be based on sound, accepted principles of veterinary medicine. Proven treatment methods should be discussed with the owner or authorized agent when presenting the treatment options available. Informed consent should be obtained prior to initiating any treatment, including CAVM.

Clients usually choose a medical course of action on the advice of their veterinarian. Recommendations for effective and safe care should be based on available scientific knowledge and the medical judgment of the veterinarian.

Responsibilities

State statutes define and regulate the practice of veterinary medicine including many aspects of CAVM. These guidelines support the requisite interaction described in the definition of the veterinarian-client-patient relationship.[1] Accordingly, a veterinarian should examine an animal and establish a preliminary diagnosis before any treatment is initiated.

The quality of studies and reports pertaining to CAVM varies; therefore, it is incumbent on a veterinarian to critically evaluate the literature and other sources of information. Veterinarians and organizations providing or promoting CAVM are encouraged to join with the AVMA in advocating sound research necessary to establish proof of safety and efficacy.

Medical records should meet statutory requirements. Information should be clear and complete. Records should contain documentation of client communications and informed consent.

In general, veterinarians should not use treatments that conflict with state or federal regulations. Veterinarians should be aware that animal nutritional supplements and botanicals typically are not subject to premarketing evaluation by the FDA for purity, safety, or efficacy and may contain active pharmacologic agents or unknown substances. Manufacturers of veterinary devices may not be required to obtain premarketing approval by the FDA for assurance of safety or efficacy. Data establishing the efficacy and safety of such products and devices should ultimately be demonstrated. To assure the safety of the food supply, veterinarians should be judicious in the use of products or devices for the treatment of food-producing animals.

If a human health hazard is anticipated in the course of a disease or as a result of therapy, it should be made known to the client.

Note

1. Model Veterinary Practice Act. In: 2001 AVMA membership directory and resource manual. Schaumburg, Ill: American Veterinary Medical Association, 2001; 319.

Junk Science and the Law

Legal systems throughout the world have often been corrupted into suppressing unpopular scientific knowledge and into promoting pseudoscience, for political, religious, or economic reasons. In the United States new regulations regarding "expert" testimony and new strategies to quiet scientific truth are gaining strength. Because of this it is imperative that skeptics realize the extent to which legal abuses may support and advance the agenda of those opposed to rational thought.

JOHN E. DODES

> "Let the jury consider their verdict," the King said, for about the twentieth time that day. "No, no!" said the Queen. "Sentence first—verdict afterwards." "Stuff and nonsense!" said Alice loudly.
>
> —Lewis Carroll, *Alice's Adventures in Wonderland*

Alice's indictment of the Queen's justice may be a prescient observation of what is occurring in parts of the U.S. legal system as it applies to scientific issues. "Junk science" refers to the use of the language of science but not the methods of science. A pragmatic definition might be: Junk science results when conclusions are drawn using low-quality data such as testimonials, anecdotes, and case reports rather than from randomized, controlled clinical

experiments. These conclusions are often in support of a political or legislative agenda.

Medicine and the Law

The very idea of licensing of healthcare providers was deemed unnecessary during the era of Jacksonian Democracy. An early report on public health in Massachusetts had these comments: "Any one, male or female, learned or ignorant, an honest man or a knave, can assume the name of physician, and 'practice' upon any one, to cure or to kill, as either may happen, without accountability. It's a free country!" (Shattuck 1948).

Since judges are often scientifically naive, the doors have been opened for the introduction of pseudoscientific "experts" who employ unscientific, biased, and discredited research methods.

From the founding of America until 1906 there were no laws governing the manufacture and promotion of real or alleged medicines, medical devices, or treatments. The first Federal Food and Drug Law, in 1906, required accurate labeling but no testing for safety or efficacy. The Congress responded to a spate of deaths due to unsafe medicines with the 1938 Food and Drug Law, which required proof that a drug was safe and did what the manufacturer said it did before it could be marketed. In 1994, under pressure from "health food" proponents, Congress passed ill-informed legislation which seriously weakened these consumer protections. We are now seeing the marketplace flooded with advertising for unproven remedies being marketed under the guise of "food supplements."

Malpractice and the Law

The fairness and accuracy of America's malpractice litigation system is often criticized and debated. Many physicians state that our system is haphazard and that lawsuits bear little relation to the quality of care that the plaintiff received. On the other hand, many patient and consumer advocates argue that so-called "tort-reform" legislation has led to such difficult legal hurdles that lawsuits with merit often bring little or no compensation (Rosenfeld 1994). Epidemiological research on malpractice claims has shown that many injuries caused by negligence do not result in claims. Interestingly, similar studies have also concluded that a substantial number of claims have been brought in cases where the plaintiff was not a victim of negligence and where there was no medical injury (Brennan 1996).

The most recent major study, published in the *New England Journal of Medicine*, actually investigated the outcomes of malpractice lawsuits. The researchers reviewed fifty-one malpractice cases over a ten-year period and obtained detailed summaries of the cases. The authors concluded: "Among the malpractice claims we studied, the severity of the patient's disability, not the occurrence of an adverse event or an adverse event due to negligence, was predictive of payment to the plaintiff" (Brennan 1996).

It is therefore evident that our malpractice laws do not help either patients or doctors—perhaps only lawyers.

Scientific Evidence in the Courtroom

In 1923 the federal court of appeals created the Frye Rule. The case was a criminal one in which the defendant wanted to prevent evidence from a rudimentary polygraph (lie detector) from being used by the prosecution. The court excluded the polygraph results and declared:

> Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs. (*United States* v. *Frye*, 293 F. 1013 D.C. Cir. 1923)

Thus the Frye Rule, also referred to as the "general-acceptance rule," became the law of the land. But the Supreme Court ruled on the last day of the 1992–1993 term that the Federal Rules of Evidence, which were first drafted in 1942, should supersede the Frye Rule. The effect of this ruling is that federal judges can now admit all scientific testimony and evidence that is "relevant" and "reliable" (Annas 1994). And because of the vagueness of the Supreme Court's ruling, judges will play a much more important role in evaluating the relevance and reliability of scientific evidence. Since judges are often scientifically naive, the doors have been opened for the introduction of pseudoscientific "experts" who employ unscientific, biased, and discredited research methods. Justice Blackmun, who wrote this Supreme Court opinion, recognized that without the Frye Rule juries and judges could be confused by "irrational pseudoscientific assertions" (*Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 113 S. Ct. 2786 1993). It was hoped that Justice Blackmun's considerations would encourage the training of judges in scientific method (Annas 1994).

Science and the law are very different. In science, "facts" are established by "incremental adjustments and carefully bounded negotiations among communities who share a commitment to closure." In law every fact is treated as "equally contingent" and every party has "every incentive to overstate the weakness in the other's case" (Jasanoff 1992). "The difference between these two approaches can make it difficult to evaluate scientific opinion in the courtroom. Proposed solutions to this problem have included the establishment of a separate 'science court' to hear disputes over scientific fact, the use of blue-ribbon juries to hear complex cases, the appointment of experts by judges, and the

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resolution of conflicts by mediation or arbitration outside the courtroom" (Annas 1994).

Peter Huber, in his 1991 book *Galileo's Revenge*, discusses the implications of junk science in the courtroom. "The art of junk science is to brush away just enough detail to reach desired conclusions while preserving enough to maintain an aura of authoritative science," Huber says. He discusses the history of junk science, from the torture and "expert testimony" employed during the Inquisition to more modern disastrous verdicts. He cites cases where products and medicines, such as the anti-nausea drug Bendectin (the repeal of the Frye Rule was due to a lawsuit against the company that manufactured Bendectin) were forced off the market because of junk science litigation. And the Audi car company was almost bankrupted by successful lawsuits that falsely claimed that Audis would accelerate without the pressure of the driver's foot on the gas pedal. Nor are sound public health methods exempt: many children are denied the benefits of fluoridation due to the junk science decisions of their local judges.

Clever witnesses and lawyers are often able to fool scientifically illiterate judges and juries. Charlatans prefer the courts of law to science.

Clever witnesses and lawyers are often able to fool scientifically illiterate judges and juries. Charlatans prefer the courts of law to the courts of science, as their chances are much better with the law. Recently quacks, charlatans, and greedy entrepreneurs have joined forces with some creative lawyers and have developed new and dangerous ways to use America's courtrooms to further their political and economic goals.

Breast Implants and the Law

In a recent lecture and book (*Science on Trial: The Clash Between Medical Science and the Law in the Breast Implant Case*) the past editor of the *New England Journal of Medicine*, Dr. Marcia Angell, describes the controversy over the safety of silicone-gel-filled breast implants. "The breast-implant story illustrates better than almost any other event in recent times how litigation, fear, bias, and greed can interfere with scientific efforts to answer an important public health question. Perhaps most troubling of all, it clearly shows that in deciding about health risks, our courts and a substantial segment of the American public seem comfortable with methods that can only be described as antiscientific and irrational" (Angell 1996).

Despite compelling scientific evidence that silicone-gel implants are safe, massive successful lawsuits have been mounted. Dow Corning, the manufacturer of the majority of the silicone breast implants, was forced into bankruptcy. The parent company, Dow Chemical, which simply supplied the silicone, was successfully sued for an award of $14.1 million to a single plaintiff and faces immense future litigation. Angell blames the use of expert witnesses. She states that despite the Supreme Court ruling (in the Bendectin case) that judges apply criteria to allow only evidence that is reliable and relevant, these guidelines have been loosely applied. Indeed, Angell reports that "witnesses are considered experts on the basis of very broadly defined credentials (for example, pathologists may be permitted to testify about epidemiologic questions), and they needn't produce evidence from the literature to buttress their opinions, even when there are relevant studies in peer-reviewed journals. In the courtroom their opinions are the evidence." This is exactly opposite of the scientific method, which declares the value of all opinions, even from experts, to be worthless without sufficient credible evidence.

The results of the silicone breast-implant litigation are far-reaching. Silicone is found in numerous medical devices, many of them vital. As of today manufacturers of penile implants and the Norplant contraceptive device, both of which contain silicone, are being sued. There is also an implied threat to the suppliers of the raw materials and they may stop selling to makers of medical devices for fear of product liability lawsuits.

Equally dangerous is the covert encroachment of litigation into the medical-research community. Scientists may well avoid research into controversial areas in order to avoid protracted and expensive litigation.

Novel Courtroom Techniques

SLAPP suits (Strategic Lawsuits Against Public Participation) have a long history of use by people with private financial interests that might be jeopardized by activists with opposing points of view (Canan 1992 and Pring 1992). SLAPP suits are usually without merit, but they discourage honest criticism and activities such as circulating petitions or testifying at public hearings, or publishing articles. CSICOP, the publisher of SKEPTICAL INQUIRER was subject to just such a suit, brought by Uri Geller. The intent of such suits is to "turn the tables on the claimants," force them from a political to a judicial forum, and "cast them as defendants." This strategy masks the original issue, transforms a legitimate public dispute into a matter for legal adjudication, and undermines the resources, commitment, and vocabulary of opponents. Even though most such lawsuits are dismissed, "the financial cost, lost time, and emotional burdens imposed on their targets often achieve the goal of 'chilling' public discussion" (Deyo 1997).

A new and particularly noxious use of the law is being employed by some alternative medical care advocates; harassment and legal attacks on researchers whose findings do not support the advocate's position. For example Simon et al. (1993) conducted a controlled evaluation of the, neuropsychological, psychological, and immunologic function of patients with a diagnosis of multiple chemical sensitivity syndrome. This disorder is treated by licensed physicians (who call themselves

clinical ecologists) as well as avant-garde health practitioners, yet the consensus of scientific opinion is that this diagnosis and its treatments have no scientific validity (Barrett 1997). Simon's study, not surprisingly, discounted the value of the costly diagnostic tests that clinical ecologists use to support disability and liability claims for chemical sensitivity. The researchers were then attacked by plaintiffs' attorneys, advocacy organizations for people who thought they suffered from chemical sensitivity, representatives from immunologic-testing laboratories, and prominent "expert" witnesses. All these participants had financial interests in maintaining the legitimacy of multiple chemical sensitivity. The attacks included "multiple complaints of scientific misconduct to the sponsoring institutions and the federal Office of Research Integrity, requests to the medical disciplinary board of Washington State that investigators' licenses be revoked, and distribution of materials at scientific meetings that accused investigators of fraud and conspiracy. Laboratory records were sequestered by the University of Washington under the rules of the National Institutes of Health and the Office of Research Integrity. Individual patients at Group Health Cooperative, where Simon worked, were contacted and encouraged to attack his credibility" (Deyo 1997).

Due to the success of these legal attacks, now there are even courses offered by trial lawyers that teach the use of allegations of scientific misconduct as a method for disputing unwelcome research findings.

Faith Healing

Faith healers have found a convenient crack in the law that allows them to be protected by the first amendment while "practicing medicine without a license" and charging for their services. The Christian Science Church in particular enjoys a host of secular benefits such as reimbursement from private health insurance companies, federal funding from Medicare, and recognition as a health care provider from the Internal Revenue Service. The IRS actually authorizes deductions for fees paid to church practitioners (who pray for the "patient") and for sanatoria (where "patients" go to be prayed for) as medical expenses. Just this year the United States Supreme Court rejected a constitutional challenge to the federal law that allows Medicare and Medicaid reimbursement for the nonmedical services that are provided in clinics run by the Christian Science Church (*Children's Health Care Is a Legal Duty* v. *McMullan*, No. 00-914). A number of legal scholars have concluded that tort (civil lawsuit) liability for negligent conduct in the faith healing treatment of children is the least restrictive means toward fulfilling the state's compelling interest of safeguarding the health and welfare of its youth" (Dodes 1987). Yet, at this time, most states have specific laws preventing such lawsuits, thus allowing and encouraging this type of quackery.

Conclusions

Justice Blackmun concluded his opinion that repealed the Frye Rule by noting that science and law both attempt to find truth but that there are important differences in their methods and goals (Annas 1994). Justice Blackmun stated: "Scientific conclusions are subject to perpetual revision. Law, on the other hand, must resolve disputes finally and quickly. . . ." The Federal Rules of Evidence were designed to promote "a quick, final, and binding legal judgment . . . about a particular set of events in the past . . . not for the exhaustive search for cosmic understanding" (*Daubert* v. *Merrell* 1993). Unfortunately many jurists have not taken Justice Blackmun's advice to become knowledgeable about science. Today, on the Supreme Court, Justice Scalia denigrates the truth of evolution and supports the teaching of creationism. Fortunately other courts, as in the recently decided Kansas creationism case, have heeded Justice Blackmun's warnings and have made the effort to abide by his recommendations.

Harassment of scientists, health-care professionals, consumer groups, and the media can be a substantial impediment to pursuing and publishing valid research on certain controversial topics. Withholding or entirely avoiding peer-reviewed funding would "slow the production of objective knowledge, force investigators to seek funding that may not be free of conflict of interest, and leave patients, physicians, and insurers without essential scientific information" (Deyo 1997).

Skeptics are involved in many aspects of solving society's problems from a rational perspective. Yet few realize the insidious and negative effect our legal system can have on the establishment and propagation of logic and science. From the Scopes trial to silicone breast implant litigation, some courts have demeaned science and promoted junk science. The system must be changed. By incorporating a standardized policy with adherence to stringent rules regarding the admission of scientific evidence most of these disastrous results can be avoided.

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Chevreul's Report on the Mysterious Oscillations of the Hand-Held Pendulum

A French Chemist's 1833 Open Letter to Ampère

An extraordinary paper written in 1833 by the French chemist Michel-Eugène Chevreul on his experiments and interpretation of the "magical pendulum" is remarkable in its prescience and astute, rational understanding of the nature of the true source of the pendulum movement. The authors here present the first complete English translation of this special document.

HERMAN H. SPITZ and YVES MARCUARD

The mysterious movement of a small pendulum held by an "unmoving" hand is a venerable example of the erroneous assignment of unusual properties to inanimate objects. The pendulum swings back and forth or in a circular path depending on what the holder is thinking, even though the holder is convinced that he or she is holding the pendulum perfectly still. The direction of the movement is said to provide yes or no answers that relieve holders from personal responsibility for decisions and choices. The pendulum allegedly reacts to the presence of certain objects or liquids, and even provides information, such as the sex of a fetus. Its actions are sometimes attributed to mystical forces or mysterious energies (e.g., chakras), but all

these magical effects occur only when the pendulum is hand-held.

Throughout history many learned men proposed weighty theories to account for the pendulum's movements and for many related phenomena. In 1808 Professor Gerboin of Strasbourg and a group of physicists published a book in which such phenomena were attributed to a new force that inaugurated a new chapter in physics, a belief supported by a number of his colleagues but not by, among others, the chemist Michel-Eugène Chevreul (1786–1889) (note that his name is not always hyphenated). The theories of Gerboin and his followers, and no doubt other such dubious theories, apparently prompted young Chevreul to perform experimental studies of the pendulum's astonishing properties in 1812. However, he did not publish his observations until 1833, and only after the urging of his friend, the eminent physicist André M. Ampère, to whom the publication was addressed as an open letter (and after whom the practical unit of electric current and the ammeter are named).

M. E. Chevreul, 1887. Archives & Special Collections, Columbia University Health Services Division.

In 1853 the French Academy of Sciences appointed Chevreul chairman of a three-man committee charged with providing the public with a scientific explanation of the apparently spontaneous movements of the divining rod, the pendulum and—particularly during séances—small tables. For many people, table turning (or table rapping) was evidence of spirits, or even of Satan himself. Chevreul authored the committee's report, published as a book, *De la baguette divinatoire, du pendule dit explorateur et des tables tournantes, au point de vue de l'histoire, de la critique et de la méthode éxpérimentale* (*Of the Divining Rod, the 'Explorer' Pendulum and Turning Tables, From the Point of View of History, Critique, and the Experimental Method*, Paris: Mallet-Bachelier, 1854). It attributed not only table turning but also such related phenomena as the pendulum and divining rod (dowsing stick) to a single principle: nonconscious (involuntary) muscle movements initiated by autosuggestion. The book included a historical survey and a discussion of the scientific method. Meanwhile, in 1852 in England, the eminent physiologist William Carpenter labeled these phenomena "ideo-motor" (now ideomotor), which nicely encapsulates the fact that an involuntary motor response can be produced by a dominant idea.

To the best of our knowledge Chevreul's 1833 paper was the first published description of controlled observations into the true source of the pendulum's mysterious oscillations. In recognition of those seminal studies the hand-held pendulum is now customarily referred to as the Chevreul pendulum. The first author became interested in Chevreul's observations while examining claims being made for facilitated communication (Spitz 1997), said to reach the competent inner person hidden behind the outer facade of incompetence presented by people with autism and/or severe mental retardation. In facilitated communication a "facilitator" holds the hand of an autistic partner who types messages on a keyboard. It turns out, however, that the facilitators are unwittingly controlling their partners' typing. (For more on facilitated communication, see SKEPTICAL INQUIRER 25[1] January/February 2001.) These movements of the facilitators place this phenomenon in the same family of automatisms as the Ouija board (Dillon 1993), automatic handwriting, mind-reading (muscle reading), table turning, dowsing, the Chevreul pendulum, and the Clever Hans phenomenon (in which superior intelligence is attributed to an animal whose responses are unwittingly cued by its human master or by observers), all of which are generated by nonconscious movements (Spitz 1997).

Chevreul is far better known in his native France than in the United States. It is difficult to understand why he is not more universally appreciated not only for the importance of his contributions to organic chemistry, color theory, and the history of chemistry, but also because of the breadth of his interests, evidenced by publications in natural history, photography, psychology, philosophy, archaeology, philosophy of science, and much more. According to Costa, when the still-active Chevreul turned 100 on August 31, 1886, it was a great national occasion. Numerous papers were presented and he was given many honors for his contributions to science and

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industry. There was an evening banquet, a torchlight parade through Paris, and special theater performances. When Chevreul died on March 27, 1889, at the age of 102, "His funeral at the Cathedral of Notre Dame attracted thousands of people who massed near the church despite heavy rains" (Costa 1962, 19).

A sizable excerpt from Chevreul's 1833 pendulum paper was quoted by the French psychologist Alfred Binet in his book *Alterations of Personality*, originally published in French in 1891 and translated into English by Helen Green Baldwin in 1896. Binet omitted a paragraph from pages 252–253 of Chevreul's paper, two paragraphs from the top of page 254 through the second line of page 255, and the final two and a half pages, all of which were of course also omitted in Baldwin's translation.

A translation by Yves Marcuard of the complete paper is given here. He tried to retain as much of Chevreul's writing style as possible.

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Note

For details of Chevreul's life and work we have drawn from two sources. The first is the initial chapter of a book by Albert B. Costa on Chevreul as a pioneer in organic chemistry (Costa 1962). The second is Joseph Jastrow's article on Chevreul as a psychologist (Jastrow 1937), which, incidentally, includes five photographs of Chevreul in 1886, one in which he is working alone and four in which he is interacting with others. A portrait of Chevreul as a young man can be found in Costa (1962).

LETTER TO MR. AMPÈRE ON A PARTICULAR CLASS OF MUSCULAR MOVEMENTS

MY DEAR FRIEND,

You are requesting from me a description of the experiments I performed in 1812 in order to know if it was true, as several people had assured me, *that a pendulum consisting of a heavy body and a flexible thread oscillates, when one holds it in one's hand above certain bodies, even though the arm be immobile.* You think that these experiments are of some importance; as I yield to the reasons you gave me to publish them, allow me to say that all of the faith I have in your genius was necessary to induce me to place under the eyes of the public facts of a nature so different from those I have discussed until now. Be that as it may, I shall, according to your request, reveal my observations; I am going to present them in the order in which I made them.

The pendulum I used was an iron ring hanging from a hemp thread; it had been put together by someone who keenly wished that I would verify for myself the phenomenon which took place when that person held it above water, a piece of metal or a live being: I was made witness of the phenomenon. It was not, I confess, without surprise that I saw it reproduced when, after having in my turn grasped the pendulum's thread with my right hand, I brought the pendulum over the mercury of my pneumatic cistern, an anvil, several animals, etc. I concluded from my experiments that if, as I had been assured was the case, there were only a number of different bodies able to induce the pendulum's oscillations, it might be that by interpolating other bodies between these and the moving pendulum, it would come to a halt. In spite of my presumption, I was quite amazed when after having taken with my left hand a glass pane, a cake of resin, etc., and having placed one of these bodies between some mercury and the pendulum oscillating above it, I saw the oscillations diminish in amplitude and disappear entirely. They resumed once the intermediary body had been removed, and disappeared again at the interposition of the same body. This succession of phenomena repeated itself many times with truly remarkable consistency, whether the interposed body was held by myself or by someone else. The more extraordinary those effects seemed to me, the more I felt the need to verify whether they were truly independent from any type of muscular movement in my arm, as had been asserted to me in the most positive manner. That prompted me to lean my right arm, which was holding the pendulum, on a wooden support that I was able to slide forward from my shoulder to my hand, and bring back from my hand to my shoulder: I soon noticed that, in the first case, the pendulum's movement decreased progressively as the support was coming closer to my hand, and that it ceased when the fingers that were holding the thread were themselves braced, whereas, in the second case the reverse effect took place; meanwhile, for the same distance from the support to the thread, the movement was slower than previously. That caused me to think that quite probably a muscular movement that was taking place unbeknownst to me was determining the phenomenon, and I had to give even more consideration to this opinion, because I remembered, albeit vaguely, having been in *quite a peculiar state*, while my eyes were following the oscillations described by the pendulum I was holding in my hand.

I performed the experiment once again, with my arm totally free, and I was convinced that the memory mentioned above was not a delusion, because I was feeling very clearly that at the same time as my eyes were following the oscillating pendulum, there was in myself a *disposition or tendency toward movement*, which, as involuntary as it seemed to me, was proportionately more satisfied as the pendulum went into larger arcs: thus I thought that if I were to repeat the experiment with a blindfold on, the results might be quite different from those I had observed. That is precisely what happened. While the pendulum was oscillating above the mercury, a blindfold was placed over my eyes: the movement soon diminished; but even though the oscillations were weak, they were not noticeably reduced by the interposition of those bodies which had seemed to stop them during my first experiment. Finally, as of the moment the pendulum came to a halt, I held it above the mercury for another quarter of an hour without it resuming movement, while during that time, and still without my knowledge, either the glass pane or the cake of rosin had been interposed and withdrawn several times.

Here is my interpretation of these phenomena.

While I was holding the pendulum in my hand, a muscular move-

ment in my arm, though unfelt by me, made the pendulum leave its resting state, and the oscillations, once begun, were soon augmented by the influence which sight exerted to put me into that peculiar state *of disposition or tendency toward movement.* Now it must be admitted that this muscular movement, albeit increased by this very same disposition, is yet weak enough to come to a stop, not even under one's deliberate will, but as soon as one merely has *the thought of trying to determine whether some given thing will stop it.* Hence there is an intimate relationship established between the execution of certain movements and the action of the thought relative to them, though that thought is not yet a deliberate will commanding the muscular organs.

Now one can easily understand how very trustworthy men, and enlightened men at that, are at times wont to make use of chimerical ideas in order to explain phenomena which do not really exceed the physical world as we know it.

It is in this respect that the phenomena I described seem to me to be of some interest to psychology, and even to the history of sciences; they prove how easy it is to take illusions for realities, whenever we venture into phenomena where our organs are somehow involved, and under circumstances that have not been sufficiently analyzed. Indeed, if I had limited myself to making the pendulum oscillate above certain bodies, and to the experiments where the oscillations were stopped, when one interposes glass, resin, etc., between the pendulum and the bodies that appeared to be determining its movement, then I certainly would not have had any reason not to believe in the divining rod and other such things. Now one can easily understand how very trustworthy men, and enlightened men at that, are at times wont to make use of chimerical ideas in order to explain phenomena which do not really exceed the physical world as we know it.[1] Once I was convinced that nothing really extraordinary existed in the effects that had so surprised me, I found myself in such a different disposition from that which was mine the first time I observed them, that much later, and at different times, I tried to reproduce them, but to no avail.

The medals minted to celebrate Chevreul's centenary in 1886, from *Oeuvres scientifiques de Michel-Eugène Chevreul* (Paris, 1886).

By invoking your testimony on the facts which took place under your very eyes more than twelve years ago, I shall prove to my readers that I am not the only person whom sight has influenced into determining the oscillations of a hand held pendulum. Surely you remember that while I was your guest, together with General P***** and several other people, my experiments became one of the topics of conversation; that the General manifested his desire to know the details, and that after I had explained them, he clearly expressed how contrary to all his ideas the influence of sight on the pendulum's movement was. You will also recall that, upon my suggestion to perform the experiment himself, he was dumbfounded when, after having placed his left hand over his eyes for a few minutes, then withdrawn it, he saw the pendulum he was holding in his right hand absolutely immobile, even though it was oscillating rapidly until his eyes ceased to see it.

The preceding facts and the interpretation I made of them led me to link them with others that we can observe every day. By that concatenation, the analysis of the latter becomes at once simpler and more precise than it was, at the same time they form an ensemble of facts whose general interpretation is susceptible to a wider extension. But before going any further, let us recall that my observations present two main components:

1. To think that a hand held pendulum may move, and that it may move without the holder having any consciousness of the muscular organs giving any impulse whatsoever; *that is the first fact.*

2. To see the pendulum oscillate, and that these oscillations become more extended through the influence of sight upon the muscular organs, still without any consciousness of the process; *that is the second fact.*

The tendency toward movement, determined in us by the sight of a moving body, is to be found in several other cases, for example:

1. When attention is entirely directed toward a bird in flight, a stone thrown slicing through the air, running water, the body of a spectator directs itself in a more or less marked manner toward the line of movement;

2. When a player of bowling or billiards follows with his eyes the body he has set in motion, he moves his own body in the direction he wants that moving body to follow, as if he were still able to direct it toward the goal at which he had aimed.

When we walk on a slippery surface, everyone knows how quickly we throw ourselves to the side opposite from that where our body is impelled by a loss of balance; but an occurrence less generally known is that a tendency toward movement manifests itself even when it is impossible for us to move in the direction of that tendency; for example, in a carriage, fear of overturning makes you stiffen in a direction opposite to the threat, and as a result your efforts grow more exhausting and anxiety and irritability increase. I believe that in ordinary falls, *letting fall* causes less inconvenience than the effort made to prevent the fall. It is in that sense that I understand the truth of the proverb: *There is a god for children and for drunkards.*

The instance I just cited leads naturally to the case where, being placed on a mountain ledge whose width offers a much broader path than would be strictly necessary if one were walking on a highway, one suddenly comes to realize the depth of the drop below. At the same instant, so to speak, one irresistibly throws oneself to the side opposite the abyss, pushed by the survival instinct that struggles against the tendency to movement in the opposite direction, determined by the

1. I readily admit that an honest man, whose entire attention is focused on the movement which a rod he holds in his hands may acquire from an unknown cause, may very well receive from the smallest of circumstances the *tendency to movement* necessary to bring about a manifestation of the phenomenon with which he is occupied; for instance, if this man is looking for a spring, if he is not blindfolded, the sight of green, lush grass, whereon he is treading, may determine in him, unbeknownst to himself, the muscular movement required to stir the rod, because of the link he established between the idea of vegetation and that of water.

sight of the sheer drop. That tendency is also noted when one is on a bridge with no railing, set above a deep gorge; the gorge, looked at from one side, makes you throw yourself to the opposite side, thus subjecting you to the same anxious state as the one you were just attempting to elude. Thus successively stressed in two opposite ways, you are transfixed and reduced to immobility unless the excessive fear of falling on the side where you are makes you run the risk of throwing yourself off the opposite side. Such is, in the case we are discussing, the case of a man who has not been trained to walk on narrow paths overlooking vertical drops, whereas the man who is accustomed to it walks in such places with as sure a foot as on a wide road, because, free of fear, he does not think of the danger that rattles the inexperienced man. Lastly, the latter's position could become even more critical, if he were to discover the depth of the abyss in a situation where, because he was following the flight of bird or a thrown stone, etc., he had already followed up to a certain point that tendency drawing us toward any moving body.[1]

The tendency to movement in a specific direction, resulting from the attention given to a certain object, seems to me the primary cause of several phenomena usually attributed to *imitation*; thus, in the case where sight or even hearing directs our thoughts toward someone who is yawning, the muscular movement of yawning is the usual consequence. I might say just as much about the communicability of laughter, and that example actually exhibits, more than any similar instance, an occurrence that seems to me to strongly support the interpretation I make of these phenomena: it is that laughter, weak at first, may, if it persists, *accelerate itself*, so to speak (as we saw the oscillations of the hand held pendulum increase in amplitude under the influence of sight), and the *accelerating* laughter can reach the point of convulsion.

There is no doubt in my mind that the sight of certain specific actions strongly influence our frail machinery, that a narrative of such actions animated through voice and gesture, or, even, the knowledge one acquires of them through mere reading, incline certain individuals toward those same actions, thus following a tendency to movement that mechanically determines in this way an action that they never would have thought of without an event distinct from their will, an action to which they would never have been driven by what one must call *instinct* in animals.

The consummate actor is one whose gestures and facial movement correspond to the movement which the feelings he translates onto the stage must have aroused in the character he represents.

The historical painter [painter of historical subjects] who studied nature knows how to grasp the position that the originals of the characters he is painting must have held, when they were contributing to the action that the canvas aims at reproducing.

A great poet is one whose verse arouses in the listener movements corresponding to the events he sings of: such is the narrative in a section of the Iliad in which Alexander lunges for his weapons.

In closing now the account of those facts that appear connected to my observations, I believe I must add a remark, indeed implicit in what I wrote, but that might have escaped some readers: it is that this tendency to movement to which I attribute the primary cause of a large number of our actions, takes effect only insofar as we are in a certain state, which is precisely what the magnetizers call the *faith*. The existence of that state is conclusively demonstrated by the account of my experiments: indeed, as long as I believed the movement of the pendulum I was holding to be *possible*, movement was taking place; but after I discovered its cause, it was no longer possible for me to reproduce it. It is because we are not always in the same state ourselves, that we do not constantly have the same impression of one identical thing: thus someone else's yawning does not always make us yawn; laughter does not always communicate itself from the person laughing to his neighbor, etc. The great orator who wants the listening crowd to share the passion that stirs him does not arrive at his goal right away, he begins by predisposing his audience to it, and it is only after having captivated them that he launches his final argument, his last stroke. The great poet, the great writer, make constant use of the same artifice; they prepare their reader to receive a final impression. There is nothing more curious in the study of the causes which determine man's actions, than the knowledge of the means used by the salesman to at first attract and then fix the buyer's attention on the qualities of the object *which he wants him to purchase*; nothing more curious than the knowledge of the means used by the conjurer in order to make you pick one card rather than another from the deck, or to bring the spectator's attention toward one certain thing, in order to distract him from another, distraction without which the prestidigitator could not cause the surprise which is the final object of his art. The outcome of these considerations is that completely different trades use quite similar means, though extremely varied, in order to reach one same goal, that of securing man's attention, in order to later exert a specific effect on him.

I believe my observations connect with the history of the faculties of animals; that there are such and such of their acts that have been attributed to instinct, which actually belong to the class of those I described. It is mainly with animals who live in groups that I believe it would be interesting to study, in this light, the influence of the leaders over the subordinate individuals. Finally, do not the cited facts shed some light on the cause of the *fascination* exerted by one animal on another?

As long as I believed the movement of the pendulum I was holding to be *possible*, movement was taking place; but after I discovered its cause, it was no longer possible for me to reproduce it.

I believe it is in the nature of my observations to attract the attention of physiologists who, like Mr. Flourens, have examined very closely the movements taking place in animals after selective ablation of parts of their nervous system; it would seem to me important to gauge the influence that could be exerted by the ablation of some of those parts on the manifestation of the phenomena that were the subject of this letter.

Such are, my dear friend, the matters which in your estimate were likely to be of interest to those people who think along with ourselves that the procedure to be followed in psychology is the one outlined by the men to whom the natural sciences owe their advances, and who share our conviction that there is no such thing as positive metaphysics for those who ignore the essential truths of the physical and mathematical sciences. The study of man's faculties is invariably linked not only to the knowledge of the means he put to use in founding each of the special branches of those same sciences, but it is also linked to the knowledge of animals' faculties. Before attempting to compose a general system of philosophy, it is necessary to have collected as vast a number as possible of groups of analogous facts, and moreover the facts in each group must have been previously investigated in depth by specific studies.

E. CHEVREUL □

1. It is not impossible that, in seasickness, something similar to what I just described happens in us.

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Twenty-Five Years of Skeptical Inquiry

In this issue we continue the 25th anniversary celebration of the Committee for the Scientific Investigation of Claims of the Paranormal and the SKEPTICAL INQUIRER. *Founding chairman Paul Kurtz leads off our anniversary section with his personal perspectives. He reflects on the founding of CSICOP, four strategic issues CSICOP faced from the beginning, selected highlights of his personal involvement in the skeptical movement, some surprises of recent years, and the development of the skeptics movement in the last quarter century.* SKEPTICAL INQUIRER *Editor Kendrick Frazier then continues with Part 2 of his thoughts on science and skepticism in the twenty-first century. These essays are excerpted from the forthcoming book* Skeptical Odysseys *(Prometheus 2001, editor Paul Kurtz), published in honor of CSICOP's twenty-fifth anniversary.*

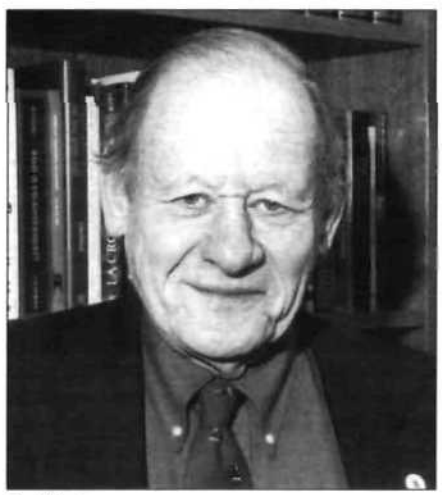
A Quarter Century of Skeptical Inquiry

My Personal Involvement

Paul Kurtz

The Creation of CSICOP

It is well known that I am the culprit responsible for the founding of the Committee for the Scientific Investigation of Claims of the Paranormal. Why did I do so? Because I was dismayed in 1976 by the rising tide of belief in the paranormal and the lack of adequate scientific examinations of these claims. At that time a wide range of claims were everywhere present. Books such as Erich von Däniken's *Chariots of the Gods?*, Immanuel Velikovsky's *Worlds in Collision*, and Charles Berlitz's *The Bermuda Triangle* were widely popular; and self-proclaimed gurus and soothsayers were stalking the media—from Uri Geller to Jeane Dixon. I was distressed that my students confused astrology with astronomy, accepted pyramid power, Bigfoot, the Loch Ness monster, Kirlian photography, and psychic surgery without the benefit of a scientific critique. Most of my scientific colleagues were equally perplexed by what was happening, but they were focused on their own narrow specialties—interdisciplinary efforts were frowned upon—and they did not know what the facts of the case were. Martin Gardner's *Fads and Fallacies in the Name of Science* was available, but aside from that there were all too few skeptical studies in the literature for open-minded inquirers, let alone the general public.



Paul Kurtz

It is within this cultural milieu as background that I decided to convene a special conference to discuss "The New Irrationalisms: Antiscience and Pseudoscience." This was held on the newly built Amherst Campus of the State University of New York at Buffalo (where I was a professor) on April 30–May 2, 1976. I drafted a call inviting a number of leading scholars to the inaugural session of the proposed new organization. This was endorsed by many philosophers, including W. V. Quine, Sidney Hook, Ernest Nagel, Brand Blanshard, and Antony Flew. And I invited many of the well-known skeptical critics to this opening session—Martin Gardner, Ray Hyman, Philip J. Klass, Marcello Truzzi, James Randi, L. Sprague de Camp, and Milbourne Christopher. The new organization, which I co-chaired with Truzzi, was to be called the Committee for the Scientific Investigation of Claims of the

Paul Kurtz is the Founder of CSICOP and publisher of the SKEPTICAL INQUIRER.

Paranormal (CSICOP). Our long-range goal was public education of the aims of science, particularly an appreciation for scientific methods of inquiry and critical thinking.

There had been other scientific efforts historically to investigate paranormal claims, such as the Society for Psychical Research founded in Great Britain in 1882 and in the United States in 1885 (by William James). And there had been many UFO groups which came into being in the post–World War II period. But most of these groups mainly attracted believers who were predisposed to accept the phenomena; the skeptics in their midst were few and far between. Thus CSICOP was the first body made up predominantly of skeptics, who were willing to investigate the alleged paranormal phenomena. We had been attacked by believers for being "closed-minded" and by other skeptics who claimed that we were dignifying phenomena that did not deserve special attention. But we thought that we had an important task to fulfill.

Today there are approximately one hundred skeptics organizations in thirty-eight countries and a great number of magazines and newsletters published worldwide, and they continue to grow.

The Agenda

There were four strategic issues that CSICOP had to address at its founding.

First, what would be our approach to such phenomena? Would we simply be debunkers out to show by ridicule the folly of the claims that were made, or would we be serious investigators concerned with research into claims, dispassionate, open-minded inquirers? The answer was clear: Our chief focus would be on inquiry, not doubt. Where we had investigated a claim and found it wanting, we would express our doubt and perhaps even debunk it, but this would be only after careful investigation.

Second, we asked, what would be our relationship to pro-paranormal believers? We observed that there were by now hundreds, perhaps even thousands, of pro-paranormal magazines and publications in the world, and that we were virtually the lone dissenting voice in the wilderness, as it were. We would be glad to engage believers in debate, but it would be our agenda, not theirs. Accordingly, we decided that we wished by and large to pursue our own research strategy, namely to encourage scientific and skeptical inquiry. Truzzi, cochairman and editor of *The Zetetic* (founded by him but which we took over), insisted that we present both believers and nonbelievers in dialogue in the pages of the magazine, and this he proceeded to do. Although members of the CSICOP Executive Council found this interesting and perhaps useful, they demurred because they felt that there was already tremendous exposure of the pro-paranormalists' viewpoint, and that we really wished to focus on the neglected skeptical case. Truzzi resigned from the editorship of the magazine, and indeed from the Executive Council, and the SKEPTICAL INQUIRER came into being, edited by veteran science writer Kendrick Frazier, who had covered the first meeting of CSICOP for *Science News*.

Third, one of the most difficult problems that we faced was, What was the relationship of the paranormal to religion? Would CSICOP deal with religious questions? Our position has been from the start that we would not investigate religious claims unless there were empirical or experimental means for evaluating them. We were not concerned with religious faith, theology, or morality, but only with scientific evidence adduced for the religious claims.

Fourth, a most interesting and unexpected development occurred: *immediately after forming CSICOP*, many concerned scientists and skeptics said that they wanted to establish similar local groups in their areas in the United States. We helped them to do so by providing our subscription lists and sending speakers. Similarly, researchers in other countries said that they wished to do the same. We assisted this effort in any way we could. I personally visited virtually all of the nascent national organizations or sent other members of CSICOP (especially James Randi, Mark Plummer, and Barry Karr). This included groups in Canada, England, France, Belgium, Italy, Germany, the Netherlands, Hungary, Mexico, and Russia. Thus skeptical organizations began forming throughout the world. What this meant was that CSICOP had become an international organization. Since science was international in scope, the critical examination of paranormal claims was also a matter for the international scientific community. This became all the more evident as the years went by, as the media became further globalized and paranormal programs produced, for example, in Hollywood, were exported virtually everywhere. Today there are approximately one hundred skeptics organizations in thirty-eight countries and a great number of magazines and newsletters published worldwide, and they continue to grow.

Needless to say the mainstay of the skeptics movement has been the SKEPTICAL INQUIRER. Its development and influence grew under the brilliant editorship of Kendrick Frazier.

Some Highlights of the First Quarter Century

After launching CSICOP, we immediately became embroiled in controversy; claims and counterclaims were bandied about. I can only touch on some highlights of my personal involvement in the skeptical movement. It is noteworthy that whatever we did as skeptics was intensely followed. Although we received a warm reception by mainline science magazines, we were bitterly attacked by believers. They accused us of being "the gatekeepers of science." They said that we blocked any consideration of new ideas and that we were suppressing new Galileos waiting in the wings to be discovered. We of course denied this and were willing to keep an open mind about any testable claim.

Astrology

This was particularly the case regarding the claims of astrology, including the investigations of Michel and François Gauquelin, who tried to support a new form of astrobiology. I will not describe this twenty-year effort except to say that their findings could not be replicated by skeptical inquirers. I think that one of the chief contributions of CSICOP over the past twenty-five years is that more scientific effort has been devoted to testing astrology than ever in the history of the subject, and many of these papers were published in the SKEPTICAL INQUIRER. All of the results were negative.

We did at the same time conduct a public campaign in an effort to get newspapers to carry disclaimers to the effect that the daily astrological columns, which were based on sun signs, had no factual scientific support, but should be read for entertainment value only. We have managed to convince some sixty newspapers to carry such disclaimers.

Parapsychology

Many of CSICOP's efforts were devoted to examining the claims of parapsychologists. We had an excellent parapsychological subcommittee, headed by Professor Ray Hyman of the University of Oregon, and including James Alcock, Barry Beyerstein, and others. This committee worked with other psychologists in the United Kingdom, especially Susan Blackmore, Christopher French, Richard Wiseman, and David Marks.

I should say that although most skeptics believed that there was considerable trickery afoot or self-deception in "psychical research," I was not certain whether psi phenomena existed. My skeptical colleagues insisted that such phenomena were unlikely, but I decided to investigate for myself, to satisfy my own curiosity. I did this by teaching a course, "Philosophy, Parapsychology, and the Paranormal," at the university. Most of the students who registered for the course were believers—I gave them a poll on the first day to determine their level of credulity. My plan was to work closely with students on various experiments in order to test psychic and other claims. I repeated the course four times over eight years, and had over 250 students enroll. They conducted nearly 100 independent tests.

The thing that absolutely stunned me was the fact that we never had positive results in *any* of the many tests conducted. I have never published these findings, for I did them basically to satisfy my desire (and that of my students) to ascertain whether anything paranormal could be uncovered. Was the so-called goat effect (doubters dampening psychic ability) suppressing the evidence? I doubt it. What I do know is that with rigorous protocols we invariably had negative results. Indeed, although 90 percent of the students began the course as believers, by the end 90 percent became extremely skeptical because of the failure to demonstrate the paranormal in their own experiments.

In my view, if we are to accept any psi factor—and we should always be open to further inquiry—we need simply to insist upon three things: first, that any results be replicated in laboratories in which neutral and/or skeptical inquirers are involved; second, that tight protocols be used so that there can be no sensory leakage; and third, that careful and rigorous grading standards be adhered to, for what constitutes a hit is often questionable.

One of my most memorable experiences in the earlier years was my debate with J. B. Rhine on April 19, 1978, at the Smithsonian Institution in Washington, D.C. One amusing incident that occurred was that we were both wearing the same color and style of suit. I asked Mr. Rhine whether this was of paranormal significance or due to chance. I thought that he was a kindly gentleman but rather naïve.

Uri Geller

From the late 1980s until the mid-1990s CSICOP was confronted with legal suits brought by Uri Geller, who claimed that he had been libeled by James Randi and CSICOP. These legal battles took almost a decade to resolve. Geller was unable to prove his case, and CSICOP was awarded court costs. Geller also sued Prometheus Books for publishing books by James Randi (*The Truth about Uri Geller*) and Victor Stenger (*Physics and Psychics*), who had quoted Randi, and me for a passage I had published in *The Transcendental Temptation*, also drawing upon Randi's account. We agreed to modify these passages. At the present moment, suits still continue in Great Britain, and threats are constant from Geller, who has sued many others.

In any case, the courts refused to find in favor of Uri Geller, who claimed that he has special psychic powers, which he refused to have tested in a court of law. The amount of time and effort spent in defending ourselves against Uri Geller was exhausting. We were gratified that our readers rallied to the cause. They were deeply concerned about these harassing suits against a scientific body. Any time a new suit was leveled against us, contributions poured in, enabling us to fight back.

UFOlogy

UFOlogy has proven to be especially fascinating. Philip J. Klass, a veteran UFO investigator, became chairman of a new UFO subcommittee which was made up of about nineteen skeptical

investigators, including Robert Sheaffer, Gary Posner, and James Oberg. We each were numbered with a 00 before our name; by chance I happened to have the number 007, reminiscent of James Bond. There were so many claims proliferating in the public domain, and in the media, that the most this committee could do was selectively attempt to explain those which were most prominent. Philip J. Klass did a yeoman's job especially in seeking out alternative causal explanations. I myself was particularly intrigued by the ETI hypothesis because I thought it was entirely possible that intelligent life existed elsewhere in the universe (even though it was sometimes difficult to find it on Earth!). But whether we were being visited or had been visited by extraterrestrial beings manning advanced-state technological spacecraft was the issue. We needed to find some hard physical evidence to corroborate these claims. The one thing that perplexed me was that eyewitnesses were so often deceived. Given the cultural milieu and the prominence of such reports almost daily at that time, many people looking at the sky thought that they had seen UFOs. Obviously they had seen *something* in the sky, but whether it was a planet, entering rockets from Soviet or U.S. space probes, meteors, weather balloons, advertising planes, or something else was unclear. I had met many people who claimed to have seen UFOs and were intrigued by what I suspected to be the will to believe, or the transcendental temptation at work.

One area that really shocked us was the growth of reports of UFO abductions. Although Barney and Betty Hill in the famous New Hampshire case (in 1961) claimed that they had been abducted aboard a UFO, most UFOlogical investigators were dubious of this and other similar reports. Accordingly, it came as a surprise to us when about ten years ago reports of abductions not only began to proliferate, but were taken seriously. We were puzzled by the claims. I debated many of the proponents on television or radio—Budd Hopkins, David Jacobs, and John Mack. Carl Sagan wrote me to say that given the intense public interest, we really ought to look into this phenomenon carefully to see if anything is there. With this in mind we invited John Mack to our national convention in Seattle, Washington, in 1994, at a special session on UFO abductions. Mack said that he was convinced that these abductions were real, that he had a number of otherwise trustworthy people who reported such experiences under hypnosis, and he had to accept their claims as true. At an open meeting Phil Klass and John Mack tangled, but we allowed Mack every opportunity to present his point of view. What was at issue was whether or not psychiatrists should accept at face value the subjective reports of their patients. Would John Mack accept the hallucinations of schizophrenics who believe deeply in the worlds of fantasy that they concoct? If not, then why accept the uncorroborated reports of UFO abductees?

An interesting sidelight: I headed a delegation of the CSICOP Executive Council to China in 1988. We spoke to several large audiences in Shanghai and Beijing. I invariably raised the open questions: "Has anyone in the audience ever been abducted aboard a UFO?" or "Does anyone know of someone who has been abducted?" The response was always in the negative. What were we to conclude from this: that the ETs are prejudiced against Chinese and only kidnap Westerners, or that the Western media hype at that time had not penetrated the Chinese mainland?

I must say that in my own empirical inquiry I have yet to find a UFO case that withstood critical scrutiny. The "sightings" in my view are not evidence for ET visitations; rather they were most likely in the "eyes of the beholders" and they tell us something about ourselves.

Believing the Unbelievable

Perhaps the most surprising thing that has occurred over the past few years is that as increasing waves of media sensationalism have inundated the public, what was formerly considered to be unbelievable is suddenly accepted as true by much of the public. Added to this is the "unsinkable rubber duck" phenomenon; namely, although skeptical investigators may thoroughly refute a claim in one generation, it may come back to haunt us in the next—as a hydra-headed monster—with new intensity and attraction. I wish to briefly illustrate this by reference to other recent weird claims.

Communicating with the Dead

In the late 1990s a spate of best-selling books by a new generation of spirit mediums have appeared—such as John Edward, James Van Praagh, and Sylvia Browne. These mediums claim to have immediate communication with the dead in which they bring messages to bereaved relatives and friends.

Unfortunately, there are virtually no efforts to corroborate what they have said by any kind of independent tests. Their subjective phenomenological readings are accepted at face value by publishers, popular television hosts, and the general public. This phenomenon is startling to skeptical inquirers who had been willing to investigate carefully the question of postmortem survival, but find this kind of "evidence" totally unreliable. Actually these so-called mediums are using familiar "hot" or "cold-reading" techniques, by which they artfully fish for information while giving the impression it comes from a mystical source. What is so apparent is that gullibility and nincompoopery overtake critical common sense and all safeguards are abandoned in the face of guile, deception, and self-deception.

Miracles

Equally surprising is the return of miracles. By the end of the eighteenth century the belief in miracles had been largely discredited by the powerful arguments of David Hume and other skeptical authors. By the nineteenth century it was believed that miracles were a substitute for our ignorance, and that if one examines long enough, one can find natural causal

explanations for otherwise inexplicable phenomena.

The outbreak of reports of miracles in the United States is especially disturbing, since America is supposed to be educationally advanced. There have been a great number of Jesus and Mary sightings, weeping icons and statues, even the return of stigmata. All of these claims, which were considered to be medieval superstitions by educated persons, have been moved to center stage by the media, and tens of thousands of devotees throng to places where miracles are proclaimed. Scientific rationalists thought that the days of miracle-mongering were long gone. Now they have returned with a vengeance.

Intelligent Design

Similarly, the case for intelligent design, long thought to have been discredited in the sciences, has been brought to new prominence. The United States is perhaps the only major democracy in which the theory of evolution is hotly contested and in which a significant percentage of the population still believes in biblical creationism. This battle has been going on in the public schools for many years. What is surprising is the sudden emergence again of the intelligent design argument, such as defended by Michael Behe in his book *Darwin's Black Box*. Arguments for intelligent design are also encountered in physics and astronomy. We are beginning to hear statements that the only way the universe can be explained is by postulating a Grand Designer. How else account for the "fine tuning" that has occurred? they ask, supposing that life could not have existed unless the proper conditions were present, and only an intelligent being could have arranged that. The arguments against intelligent design go back in the history of science; to wit, there is no evidence for a Designer. To read into nature the mind of God in analogy with the mind of Man is a vast postulation, a speculative thesis not based upon scientific evidence. Here we are dealing with a leap of faith, not fact.

Alternative Medicine

One other recent and unexpected development is the rapid growth of "alternative" or "complementary" medicine. A wide range of alternative therapies have become popular, most of them ancient, many of them imported from India and China. The list of these therapies is extensive. It includes acupuncture, qigong, therapeutic touch, magnetic therapy, iridology, naturopathy, reflexology, homeopathy, the extensive use of herbal medicines, esoteric cancer cures, crash diets, and the like.

One must have an open mind about such therapies. They cannot be rejected a priori. Skeptical inquirers have insisted that proposed alternative therapies need to be submitted to double-blind randomized testing. Unfortunately, much of the support for alternative medicine is based on anecdotal hearsay or testimonials by self-proclaimed healers—such as Andrew Weil and Deepak Chopra—and much of this is spiritual in character.

Skeptical inquirers are dismayed by this development because scientific evidence-based medicine has made enormous strides in the past century combating illnesses, extending human life, and mitigating suffering—including the discovery of anesthesia, antibiotics, and modern surgery. Of course, not all diseases have been cured by the medical profession, and so out of desperation many patients turn to alternative therapies. In some cases, if you leave an illness alone, the body will restore itself to health. In others, the placebo effect may have powerful therapeutic value. In any case, the failure of large sectors of the public to appreciate how the scientific method works in medicine is one reason why alternative therapies seem to be gaining ground.

Some Concluding Reflections

The development of the skeptics movement in the last quarter of a century I submit is a very significant event in the history of science; for it helped to galvanize for the first time scientific inquirers who are willing to take part in systematic critical evaluations of paranormal claims.

The basic question that we need to ask is, Why do paranormal beliefs persist? One explanation is because the claims of religions—old and new—are largely unexamined within present-day culture. It is considered to be in bad taste to question anyone's religion. Granted, we ought to be tolerant of other points of view. On the other hand, should claims that are patently false be immune to criticism? There are a plethora of religious denominations in the United States and hundreds of bizarre sects and cults. Religious miracles like paranormal claims postulate a nonnatural transcendental realm that allegedly cannot be evaluated by evidence or reason. The universe is bifurcated into a natural world, which science deals with, and a transcendent spiritual realm, which allegedly lies beyond our ability to comprehend it. Concomitant with these two realms, their proponents insist, are two truths. This dualism is also said to apply to human personality where we confront a "separate soul."

This classical religious outlook had been eroded by the Copernican and Darwinian revolutions and by steady advances in the behavioral and neurological sciences. In spite of this, the spiritual realm is very rarely questioned. In my view it is often difficult to isolate paranormal claims from religious claims. Most skeptical inquirers have said that they wished to deal only with those questions that have some empirical grounding. Interestingly, believers in the paranormal/spiritual worldview have blurred the borderlines between the paranormal and the religious. Religious conservatives and fundamentalists have, of course, been highly critical of New Age astrology, UFOlogy, and psychic phenomena, which they consider to be in competition with traditional religion.

Nonetheless, paranormal phenomena, which allegedly exist over and beyond or beside normal science, are similar to religious miracles. I have labeled religious miracles as "paranatural," for they lie midway between the supernatural and the natural and are amenable to some evidential examination. In this sense,

communication with the dead, the sighting of ghosts, exorcisms, faith healing, prophecies, and prayer at a distance are not unlike UFO abductions, out-of-body experiences, or precognitive predictions—they all are capable of being investigated scientifically.

Unlike many European and Latin American countries, the United States has never had a strong anticlerical tradition. There are few, if any, objective examinations readily available to the public of the so-called sacred literature. Why should reports of miracles in holy books—faith healing, exorcism, the virgin birth and Resurrection, the ascension of Mohammed to Heaven, or the visitation of Joseph Smith by the Angel Moroni—be any less amenable to critical scrutiny than any other extraordinary paranormal reports? Given the current cultural phobia against the investigation of religion, however, I submit that irrationality will most likely continue strong—unless skeptical inquirers within the scientific community (if not CSICOP itself) are willing to use the best standards of science, including archaeology, linguistics, history, biology, psychology, and sociology to uncover naturalistic explanations.

Another explanation for the persistence of the paranormal, I submit, is due to *the transcendental temptation.* In my book by that name, I present the thesis that paranormal and religious phenomena have similar functions in human experience; they are expressions of a tendency to accept magical thinking. This temptation has such profound roots within human experience and culture that it constantly reasserts itself.

Transcendental myths offer consolation to bereaved souls who cannot face their own mortality or those of loved ones. They provide psychological succor and social support, enabling them to endure the tragic elements of the human condition and to overcome the fragility of human life in the scheme of things. We need to ask how and in what sense the transcendental temptation can be modified and whether naturalistic moral and poetic equivalents can be found to satisfy it. I am convinced that belief in the paranormal is a religious or quasi-religious phenomenon: Astrology postulates that our destiny lies in the stars. Psychics maintain that there are untapped extrasensory powers that can probe other dimensions of reality. UFOs transport semidivine extraterrestrials from other worlds. All of these are efforts to transcend the normal world.

Still another factor in the recent growth of the paranormal is the introduction of new electronic media of communication that are radically altering the way that we view the world. Symbols and concepts are being replaced by signs and images: the abstractions of logic by contrived virtual realities. The culture of books is supplemented by the visual and auditory arts. These media express imagery and sound, form and color. Cinematography transforms intellectual content. Science fiction becomes the Sacred Church of the Paranormal. Soaring flights of imagination distort what is true or false. Instead of explicating a thesis, the immediacy of photography in motion seizes us and renders products of fancy as real.

The special problem that we face today is that the dramatization of spiritual-paranormal claims without adequate criticism now dominates the mass media, which are all too often more interested in box-office appeal than accurate information. Huge media conglomerates find that selling the paranormal by means of books, magazines, TV, and movies is extremely profitable. There is too little time devoted to dissenting scientific critiques.

Computers are also rapidly transforming the way information is imparted. The Internet is a vast repository of data bytes that presents a huge quantity of unfiltered claims that can be scrolled without critical analysis. By undermining standards of objectivity, any sentence or utterance is as true as any other, and in this process the methods of logic and science are deemed irrelevant. Added to this is the emergence of postmodernism in the academy, which denies the objectivity of science or the possibility of achieving reliable knowledge.

I believe that the skeptical and scientific community has a special responsibility to help redress the current state of distortion and misinformation. This becomes difficult, however, for science has become overspecialized. Surely, a division of labor is essential if we are to advance the frontiers of knowledge; we need technical experts focused on specific fields of investigation. Yet one reason why the scientific outlook is continuously undermined by antiscience and pseudoscience is because specialists in one field may not necessarily be competent to judge claims in others, nor do they always understand that science primarily is a method of inquiry. Likewise there is insufficient understanding of the broader implications of scientific discoveries to our conception of the universe and our place within it.

I submit that it is incumbent on us to defend the naturalistic interpretation of reality, a materialistic not a spiritual-paranormal account. We need generalists of science who can sum up what science tells us about the human condition in a universe without purpose or design, yet who have the ability to awaken wonder and excitement about the scientific quest itself.

Given the massive cultural fixation on the spiritual-paranormal outlook, perhaps the most that skeptical inquirers can hope for is that we can lessen the excessive follies of its proponents. Perhaps our most effective course is to moderate untested overbeliefs and encourage critical thinking as far as we can. Our agenda should be to encourage the extension of critical thinking to all areas of life—including religion, politics, ethics, and society.

Looking ahead, I think that we can expect, unfortunately, that spiritual-paranormal beliefs will continue to lure the public. Although the content of their beliefs may change in the light of criticism, some forms of the paranormal will most likely persist in the future. Skeptical inquirers thus will have an ongoing role to play in civilization. Our mission is to light candles in the dark, as Carl Sagan so eloquently stated, and to become Socratic gadflies questioning the sacred cows of society and cultivating an appreciation for reason. □

From the Editor's Seat: Thoughts on Science and Skepticism in the Twenty-First Century

Kendrick Frazier

Second of two parts

If paranormal and fringe-science ideas have such enduring powerful appeal and seem to fulfill deep human needs, what can scientists and scientific-minded skeptics do? If I didn't think we were accomplishing something, I wouldn't be doing this. The first step is to understand those human needs and to have some compassion for the human condition. We are all in this together. It is self-defeating to put yourself above the fray, separate from the rest of humanity. Understanding these powerful needs is essential and should help shape how you frame your responses to others' arguments and claims.

Although the appeal of the paranormal and pseudoscience will always be with us, I think it should be the goal of scientists, scholars, and scientific-minded skeptics everywhere to combat and contain the most extreme and irresponsible elements of claims-mongering. Outright misrepresentations of science must bring strong correction. Efforts to introduce bad science or pseudoscience into science curriculums or the political process must be opposed. The more irresponsible elements of the entertainment and communications media must be battled whenever they replace good science with unfounded speculations, pseudoscience, and lies. Responsible media must be encouraged and helped to gain accurate scientific information and be given well-informed scientific comment and perspective. The writers of excellent, scientifically responsible articles and producers of fine science-oriented documentaries must be encouraged and praised. Political leaders, lawyers, judges, and juries must be given accurate information about what is good science and what assertions have no scientific legitimacy.

I think the best way for most scientists, scholars, and teachers to do this is to emphasize the positive. Emphasize what you are *for*. We share important core values that should appeal to a good part of the public: honesty, integrity, and the value of good science, clear thinking, intelligence, scientific literacy, science education, and open scientific inquiry. Other important attributes include the error-correcting functions of science, the commonsense aspects of science, and the fact that in science the ultimate authority is not what any individuals may wish, believe, or say but what the evidence shows. Authority just doesn't count in science, at least not in the long term. In that sense, science is highly democratic, even populist. Even those areas where science violates common sense and intuition, such as relativity or quantum mechanics, give us an opportunity. We can point out that these two highly successful areas of modern physics are examples where firm experimental evidence has ratified clearly bizarre aspects of nature, something that might appeal to many people.

Most scientists and scholars—except for the most incorrigible postmodernists—will agree that the methods of science are an extremely effective approach to getting knowledge about nature. Many scientists will go much further and say that the methods of science together represent one of the most successful ways, if not *the* most successful way, humans have

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ever devised to expand our knowledge of the world.

"Skepticism" itself is a core value, but it can be a hard sell. We all know it is an essential part of science, vital and complementary to science's imaginative, no-holds-barred, go-after-the-facts-no-matter-where-they-lie, creative aspects. But to most people "skepticism" and "skeptic" sound negative. I try to point out that skepticism is just ordinary common sense. You kick the tires and get a mechanic to take a look before you buy a used car. Why not take a very close, skeptical look before buying someone else's opinion? From pyramid schemes to "pyramid power," skepticism can save you a lot of grief and money. It is an ultimate form of consumerism.

Science and scientific inquiry, however—despite some ever-present antiscience and anti-intellectual trends in society—should really be an easy sell. Polls for the National Science Board's series of *Science Indicators* reports show that the public strongly supports science and has a fascination with new discoveries. They also show that the public doesn't know very much about science. This is especially true of the methods and processes of science. Some understanding of these processes is really necessary for getting a sense of what is good science and what is bad science (or worse). But the fact that the public has very positive attitudes toward science provides an opportunity. We can use that interest to good effect.

Here are just a few examples of what we can show:

• What we know (and more important how much we don't yet know) about how the human mind really works.

• How our brains still far outperform any computer yet built at pattern-recognition, yet usually fail us in accurately assessing statistical evidence.

• That these wonderful pattern-recognition functions evolved because they have immense survival value, yet at the same time they can mislead us when our brains overdo connecting the dots and find patterns and meaning that may not really be there.

• That the study of consciousness is becoming a solidly experimental science. Using functional magnetic resonance imaging (fMRI) of the brain activity of volunteers when they became conscious of images gradually appearing before them, researchers can see visual signs of neuron activity as the volunteers press buttons indicating their perception. But the researchers viewing the images could see that the neuronal activity started *before* the volunteers pressed the buttons, essentially the emergence of a conscious thought. As one researcher says, "Consciousness *is* brain activity."

• How deep-time and the immensity of the universe dwarf our ability to comprehend them. The former provides ample time for the natural workings of evolution and the latter provides severe limitations to the possibility that we are being routinely visited by alien spacefarers.

• That although a succession of remarkable but unsettling discoveries over the centuries have seemingly downgraded our status in the universe, on a size-scale human beings are nevertheless at a centrist position—at about the exact midpoint from the smallest atomic particle to the largest cosmological distance.

• How while the evolution of life is solidly grounded in scientific evidence, the *origin* of life is still yet essentially a mystery.

• How not only does life evolve, the universe itself evolves. Astronomers can see areas of very young stars, newly born. Old stars, dying, collapsing, and exploding, provide some of the most stupendous explosions we can witness, and the explosions manufacture the heavy elements—the "star stuff"—out of which we are made.

• That while most scientists doubt we've ever been visited by extraterrestrial beings, the idea that the first molecular seeds of life may have come to Earth from elsewhere aboard comets or planetesimals at an early stage in the history of solar system is gaining some scientific respectability.

• That while many scientists feel that life must be widespread in the universe and we're monthly finding new planets around other star systems and also confirming the ability of organisms on Earth to thrive under extreme conditions such as boiling hot deep sea vents and in rock deep underground, it doesn't necessarily follow that intelligent life is widespread in the universe. There is another, new view. These scientists agree that simple life may be very common in the universe but argue that Earth has a unique combination of circumstances (such things as an exceedingly large moon that helps keep Earth's axis stable and therefore long-term climate changes from being too extreme) that may nevertheless be very rare and special (the "Rare Earth" hypothesis). If that is so, the step from simple life to advanced life is so difficult that it just may be likely that we are virtually the only civilization in our universe.

You can see that I hope always to bring a scientific viewpoint—even an imaginative scientific viewpoint—to skepticism. I think to do so is important. I have tried to emphasize that whenever possible in the decisions that go into the SKEPTICAL INQUIRER.

Although probably the majority of claims and topics we examine lie outside the boundaries of mainstream science, keeping ourselves close to real science has essential advantages. Here are some of them:

• The daily advance of scientific discoveries is exciting and intellectually stimulating, and that excitement can carry over to skeptical investigation.

• The imaginative/creative and the skeptical/evaluative aspects of science are intermingled in research on a continual basis, and it is important to keep both in mind.

• The methods of science are still the main tools used to evaluate claims outside of science (not the *only* tools, for we use everything from forensics to conjuring knowledge to historical analysis to investigative journalism), but the main ones.

• What helps separate science from nonscience (and worse) are not the specific topics under examination, but proponents'

willingness to apply the various methods of science to their ideas and to frame propositions in a way that can be tested and proved wrong if they are wrong.

• Many of the institutional aspects of science such as peer-review, open exchange of information, formal publication, freedom of inquiry and discussion, international cooperation, reliance on observation and experimental evidence, and such things as double-blind studies are essential in scientific skepticism as well.

And a more subtle point: Just as good science uses skepticism, good skeptical inquiry uses both science and what philosophers call pragmatic or mitigated or moderate skepticism. In other words, there are limits to the degree of skepticism that is appropriate, and I think keeping close to science is very helpful in keeping on track in this regard. Dogmatic skepticism—doubt or denial unaccompanied by investigation—is sterile and unconstructive. Science uses pragmatic or mitigated skepticism. Science builds upon previous knowledge piece by piece and combines creative inquiry and criticism to the constructive end of gaining provisional new knowledge. It would never be healthy for "skeptics" to be more skeptical than the scientific community itself. Science deals successfully with absolutely bizarre claims all the time; the only difference is that the subjects involved have withstood previous evidentiary tests and have been defined as legitimate science by review committees, funding agencies, journals, and the like. Many new ideas in science, including bizarre ones, become repeatedly confirmed on the basis of strong experimental evidence. Other new hypotheses fail the tests of evidence and are eventually forgotten. It is the evidence that determines all this, not any preconceived opinion or ideological view.

Dogmatic skepticism—doubt or denial unaccompanied by investigation—is sterile and unconstructive. Science uses pragmatic or mitigated skepticism. Science builds upon previous knowledge.

If scientific institutions and the public funding agencies were to decide that it was in the public interest to do so, the same processes could be applied by mainstream science to the kinds of subjects the SKEPTICAL INQUIRER evaluates. Scientists are very pragmatic here too. They go where the funding is. They have no choice. And those funding decisions are not made arbitrarily. They also are a product of review panels and peer review. One of the key determinants is, essentially, *fruitfulness.* Is there a potential payoff? Is something here likely to advance our knowledge? Are there indications that an investment of scientific research in this area will open important new pathways of understanding? Is there an intellectual richness that has some value? These questions have been asked before about such things as UFOs, astrology, paranormal claims, and the like, and they have been answered (legitimately in my view) in the negative. So most scientists, especially in the early, most difficult parts of their careers, probably aren't going to spend much of their professional time thinking about these kinds of claims at all, let alone try to come up with ways to test and evaluate them. They have too many other priorities. But this then leaves a gap. The gap means there is a danger that high-level scientific competence may not be applied in examining paranormal and fringe-science claims.

This is where I think CSICOP, the SKEPTICAL INQUIRER, and the skeptical movement in general come in. We help fill that gap. We are in effect a surrogate in that area for institutional science. And we are most effective when we *truly represent* the views and values of the worldwide scientific community. We must essentially have the same values. In actual fact, in the majority of cases, the people who do our evaluations and articles are from the scientific and scholarly communities. This work may not noticeably advance their scientific or scholarly careers because it is unfortunately not often considered part of their regular scientific work. This despite repeated urgings from scientific organizations and others to encourage and reward scientists who devote a portion of their time to helping educate and inform the public. Rewards are still infrequent. Most do it to some degree on their own, drawing on all their scientific and intellectual backgrounds and making time available out of personal interest and because they realize that it is important. It is *terribly* important. I am so grateful to the many scientists scholars, educators, and investigators who devote so much time and intellectual effort to preparing and writing articles, reviews, and columns for the SKEPTICAL INQUIRER. They are, in my view, scientific heroes.

The cross-fertilization between institutional science and scientific skepticism is extensive, and that is all to the good. Just as in science one cannot determine prior to rigorously examining the evidence whether a particular new idea or claim has validity, in scientific skepticism inquirers must be careful, especially if the topic or claim is new and unevaluated and presented as amenable to scientific examination, not to prejudge it and instead to let the evidence determine the outcome. In other words, a certain level of humility is required. The evidence is the arbiter, nothing else.

What I have said applies of course to *new, untested* claims and to theories that pose no obvious contradiction to scientific principles. What instead is frequently presented to scientific skeptics for judgment or approval are things that already have been scientifically tested and examined, over and over, countless times in countless ways, over years, decades, or (as with astrology) centuries, and found wanting. Or things that violate repeatedly confirmed laws or principles of nature such as the second law of thermodynamics or the conservation of energy.

Here is when scientific experimentation can be put aside for a time and the even more difficult and frustrating task of public education begins. Explaining that someone's pet theory or idea is virtually identical to others that have been repeatedly tested and failed those tests is not likely to be well received. Yet that is the position scientific skeptics are placed in over and over—both with proponents of the ideas and with the media. It is a bit thankless. But it must be done. And it can be made more palatable to both parties if you bring some patience and some of the compassion I spoke of earlier along with the necessary scientific knowledge and toughmindedness when delivering the message. The message can be reinforced with a fundamental tenet of skepticism: the burden of proof is on those making the assertion. Even skeptics frequently forget this tenet and put themselves in a hole by trying to disprove some claim for which no reasonable evidence has been presented. Everyone must be reminded where the burden of proof rests. This is as true in science as in scientific skepticism.

I want to briefly mention two more topics. Both have been shaped by my determination to keep the SKEPTICAL INQUIRER close to science.

The first is the fact that we have always been far broader in our interests than some might assume from the name of our parent committee: ". . . for the scientific investigation of claims of the paranormal." *Scientific?* Yes, always. *Paranormal?* It doesn't have to be limited to that.

Recall from the opening paragraphs of Part One of this essay (May/June), the initial announcement of CSICOP referred to "the paranormal *and related phenomena*" (my emphasis).

In my view, what relates all the topics we are concerned about is not whether they invoke the "paranormal" but whether they seem clearly to violate scientific principles or whether they have been handled in ways inimical to the spirit of scientific inquiry. Do they casually invoke "energy fields" science knows nothing about? Have they skirted all forms of peer review? Are there direct appeals to the public, without any form of prior expert review? Have any controlled tests been done? Are the hypotheses framed as scientific hypotheses, i.e., is the assertion posed in such a way that it can in principle be proved to be wrong if it is wrong? Or has just the opposite happened, has it been framed so that only positive evidence can be obtained? Are the proponents aware of previous scientific studies and examinations of similar claims and do they acknowledge and build on those? Have anecdote and eyewitness testimony been emphasized over scientific testing and confirmed evidence? Has authority been invoked, such as the word of a charismatic guru? Is the very spirit of science disparaged, such as the argument that if you don't *believe* (without evidence), you're just being closed-minded? Are specious arguments used: "They laughed at Galileo too!" or "I know what I saw!" These are all hallmarks that something's seriously wrong. And they are indications that we might want to get involved with some critical examination of our own.

In my view, what relates all the topics we are concerned about is not whether they invoke the "paranormal" but whether they seem clearly to violate scientific principles or whether they have been handled in ways inimical to the spirit of scientific inquiry.

And then, looked at from the other viewpoint, do the subjects raise issues for science education, science literacy, the public perception of science, the philosophy of science? Do they raise consumer-protection issues? Is science invoked dishonestly to sell an idea or a product? Are national news organizations getting carried away treating something as real science that merits no such distinction? Or is there something here that is of special interest to science-oriented, philosophically minded readers? We are, after all, subtitled "The Magazine for Science and Reason."

So you can see there are many justifications for our interest in examining a topic beyond any "paranormal" connection. Many years ago I prepared a list of subjects we had written about in SI that had nothing to do with the paranormal. It took a full page.

Here are just a few new examples: Mass delusions and hysterias of the past millennium; a skeptic's guide to the laws of nature; the pseudoscience of oxygen therapy; the quality of medical Web sites; the universe and Carl Sagan; the physics behind four amazing demonstrations; how well do projective measures of personality work?; Carlos Castaneda and New Age anthropology; the Mead-Freeman controversy in anthropology; the myth that we use only 10 percent of our brain; organ-snatching urban legends; fears of the apocalypse; the failure of dowsing experiments; the perils of post-hoc reasoning; how to

study weird things; open minds and the argument from ignorance; the compelling nature of extraordinary claims in the absence of alternative explanations; hidden messages and the Bible code; alternative medicine in a scientific world.

Many readers would have us expand our reach even further, to encompass examination of organized religion. I am sympathetic to their appeal, up to a point. Once again, here we are guided by our connections to science. And one can strongly argue—and the arguments go on and on—that science and religion are separate domains, each treating different aspects of the human situation, the former the quest for knowledge of the natural world, the latter the search for personal meaning and significance. The hard fact is, although religion is a dominant cultural force in society, it is *not* a part of science, nor should it be. Science's always questioning attitudes and religion's appeal to unquestioning faith are anathema. And we are, essentially, a scientific organization and a science-oriented magazine. The very first issue of the SKEPTICAL INQUIRER (then *The Zetetic*) said this:

> . . . [A] word might be said about our exclusive concern with *scientific* investigation and *empirical* claims. The Committee takes no position regarding nonempirical or mystical claims. We accept a scientific viewpoint and will not argue for it in these pages. Those concerned about metaphysics and supernatural claims are directed to those journals of philosophy and religion dedicated to such matters.

That was the original intention of our founding Executive Council members, and it has served us well. We have had abundant opportunity to deal with *empirical* claims related to religion. These have included the Shroud of Turin, the continuing abuses of science and evolution by the creationists and sympathetic politicians, claims of bleeding religious icons, the recent fad alleging spontaneously appearing crucifixion-like wounds or stigmata, religious cult groups such as Heaven's Gate whose members committed mass suicide in a belief they would ascend to join space people they thought were associated with Comet Hale-Bopp, and on and on. We have also dealt sociologically with the issues of religious belief: its extent, influence, and ramifications for society.

So while we leave critical examination of religion itself to our sister publications, we nevertheless deal with certain aspects of it within the context of our role as both a science publication and a magazine of science and reason.

In July/August 1999, we devoted an entire expanded issue of the SKEPTICAL INQUIRER to "Science and Religion: Conflict or Conciliation?" I introduced it with an essay "Science and Religion: Conflicting or Complementary?" Twenty authors including distinguished scientists and philosophers then wrote on different aspects of the matter. It was the most successful single issue of SI in our history: the greatest reader satisfaction as measured by the volume of letters to editor (well over 140) and their overwhelmingly complimentary tone ("I greatly enjoyed the special issue," "I thoroughly enjoyed . . . ," "excellent articles," "thought provoking," "very welcome," "pleased," and a variety of other accolades). A few expressed disappointment the articles didn't lambaste religion directly, but that wasn't our intention.

My own feeling for why the issue was so well received focuses on two reasons: The first was that it was refreshing to many longtime readers because we had not ever devoted much space to the issues of religious belief. The more important reason, in my view, is that we did it in a very thoughtful and nonconfrontational way. Focusing specifically on the issue of science and religion allowed us to be respectful of sincere mainstream religious belief while clearly demarcating religion from everything science is all about. It was good to know that could be done in a way that most readers appreciated. We plan a second science and religion issue very soon, before the end of this year.

The modern skeptical movement has completed a resounding first 25 years since that inaugural conference on antiscience and pseudoscience that started it all in 1976. We have been a strong and resilient voice of scientific skepticism. Long an independent, international, nonprofit scientific and educational organization, CSICOP itself has steadily expanded its activities and reach. The tradition of stimulating conferences has continued and been internationalized. The SKEPTICAL INQUIRER has expanded its audience, publication frequency, and page size. The subtitle added in Fall 1994 describes the broader purpose: The Magazine for Science and Reason. We serve a vigorous community of scientists, scholars, educators, investigators, and others worldwide. Independent national, regional, and local groups with similar aims and intellectual ties to CSICOP have been founded nearly everywhere.

The influence of both CSICOP and SI has been significant. Both are widely referenced in scientific and scholarly publications as well as the popular media. CSICOP's media outreach efforts serve news and entertainment media worldwide, providing authoritative, responsible scientific information and experts for comment and interviews. Workshops teach how to conduct investigations and how to examine various kinds of claims. A published quarterly newsletter serves CSICOP associates. New electronic newsletters circulate timely announcements and critiques and relevant news. A dynamic Web site (www.csicop.org) provides broad information and access.

The controversy and media and public interest that accompanied our founding still surround almost everything we do. This is virtually inevitable given the inherent interest and fascination of the subjects we examine and the deep investment of belief many people have in them. But maintaining close ties to the values of science and scientific inquiry has helped guide us through and around all the worst thickets and pitfalls. In my view our reputation for commitment to scientific skepticism, rationalism, and scientific integrity is stronger than ever. And that serves us all well—the worldwide community of scientific skeptics and the broader public we serve—as we look forward to applying those attributes well into this new century and millennium. □

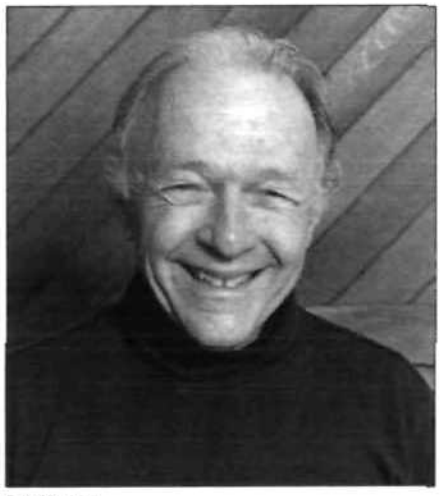
Proper Criticism

This brief guide by psychology professor Ray Hyman, a member of the CSICOP Executive Council from the beginning, has for many years been used by Skeptical Inquirer*'s editorial staff and widely distributed to authors and others. It was printed some years ago in the CSICOP newsletter* Skeptical Briefs*, and it appears in Hyman's book* The Elusive Quarry*, but it has never actually been published in SI. We thought our 25th anniversary would be a good time to do so.*

—The Editors

Ray Hyman

Since the founding of CSICOP in 1976, and with the growing number of localized skeptical groups, the skeptic finds more ways to state his or her case. The broadcast and print media, along with other forums, provide more opportunities for us to be heard. For some of these occasions, we have the luxury of carefully planning and crafting our response, but most of the time we have to formulate our response on the spot. But regardless of the circumstance, the critic's task, if it is to be carried out properly, is both challenging and loaded with unanticipated hazards.



Ray Hyman

Many well-intentioned critics have jumped into the fray without carefully thinking through the various implications of their statements. They have sometimes displayed more emotion than logic, made sweeping charges beyond what they can reasonably support, failed to adequately document their assertions, and, in general, failed to do the homework necessary to make their challenges credible.

Such ill-considered criticism can be counterproductive for the cause of serious skepticism. The author of such criticism may fail to achieve the desired effect, may lose credibility, and may even become vulnerable to lawsuits. But the unfavorable effects have consequences beyond the individual critics, and the entire cause of skepticism suffers as a result. Even when the individual critic takes pains to assert that he or she is expressing his or her own personal opinion, the public associates the assertions with all critics.

During CSICOP's first decade of existence, members of the Executive Council often found themselves devoting most of their available time to damage control—precipitated by the careless

Ray Hyman, professor emeritus of psychology at the University of Oregon, is a Fellow and member of the Executive Council of CSICOP and a member of the Skeptical Inquirer *editorial board.*

remarks of fellow skeptics—instead of toward the common cause of explaining the skeptical agenda.

Unfortunately, at this time, there are no courses on the proper way to criticize paranormal claims. So far as I know, no manuals or books or rules are currently available to guide us. Until such courses and guide books come into being, what can we do to ensure that our criticisms are both effective and responsible?

I would be irresponsible if I told you I had an easy solution. The problem is complicated and there are no quick fixes. But I do believe we all could improve our contributions to responsible criticism by keeping a few principles always in mind.

We can make enormous improvements in our collective and individual efforts by simply trying to adhere to those standards that we profess to admire and that we believe that many peddlers of the paranormal violate. If we envision ourselves as the champions of rationality, science, and objectivity, then we ought to display these very same qualities in our criticism. Just by trying to speak and write in the spirit of precision, science, logic, and rationality—those attributes we supposedly admire—we would raise the quality of our critiques by at least one order of magnitude.

The failure to consistently live up to these standards exposes us to a number of hazards. We can find ourselves going beyond the facts at hand. We may fail to communicate exactly what we intended. We can confuse the public about what skeptics are trying to achieve. We can unwittingly put paranormal proponents in the position of the underdogs and create sympathy for them. And, as I already mentioned, we can make the task much more difficult for other skeptics.

What, then, can skeptics do to upgrade the quality of their criticism? What follows are just a few suggestions. It is hoped they will stimulate further thought and discussion.

1. **Be prepared.** Good criticism is a skill that requires practice, work, and level-headedness. Your response to a sudden challenge is much more likely to be appropriate if you have already anticipated similar challenges. Try to prepare in advance effective and short answers to those questions you are most likely to be asked. Be ready to answer why skeptical activity is important, why people should listen to your views, why false beliefs can be harmful, and the many similar questions that invariably are raised. A useful project would be to compile a list of the most frequently occurring questions along with possible answers.

Whenever possible try your ideas out on friends and "enemies" before offering them in the public arena. An effective exercise is to rehearse your arguments with fellow skeptics. Some of you can take the role of the psychic claimants while others play the role of critics. And, for more general preparation, read books on critical thinking, effective writing, and argumentation.

2. **Clarify your objectives.** Before you try to cope with a paranormal claim, ask yourself what you are trying to accomplish. Are you trying to release pent-up resentment? Are you trying to belittle your opponent? Are you trying to gain publicity for your viewpoint? Do you want to demonstrate that the claim lacks reasonable justification? Do you hope to educate the public about what constitutes adequate evidence? Often our objectives, upon examination, turn out to be mixed. And, especially when we act impulsively, some of our objectives conflict with one another.

The difference between short-term and long-term objectives can be especially important. Most skeptics, I believe, would agree that our long-term goal is to educate the public so that it can more effectively cope with various claims. Sometimes this long-range goal is sacrificed because of the desire to expose or debunk a current claim.

Part of clarifying our objectives is to decide who our audience is. Hard-nosed, strident attacks on paranormal claims rarely change opinions, but they do stroke the egos of those who are already skeptics. Arguments that may persuade the readers of the *National Enquirer* may offend academics and important opinion-makers.

Try to make it clear that you are attacking the claim and not the claimant. Avoid, at all costs, creating the impression that you are trying to interfere with someone's civil liberties. Do not try to get someone fired from his or her job. Do not try to have courses dropped or otherwise be put in the position of advocating censorship. Being for rationality and reason should not force us into the position to seeming to be against academic freedom and civil liberties.

3. **Do your homework.** Again, this goes hand in hand with the advice about being prepared. Whenever possible, you should not try to counter a specific paranormal claim without getting as many of the relevant facts as possible. Along the way, you should carefully document your sources. Do not depend upon a report in the media either for what is being claimed or for facts relevant to the claim. Try to get the specifics of the claim directly from the claimant.

4. **Do not go beyond your level of competence.** No one, especially in our times, can credibly claim to be an expert on all subjects. Whenever possible, you should consult appropriate experts. We, understandably, are highly critical of paranormal claimants who make assertions that are obviously beyond their competence. We should be just as demanding on ourselves. A critic's worst sin is to go beyond the facts and the available evidence.

In this regard, always ask yourself if you really have something to say. Sometimes it is better to remain silent than to jump into an argument that involves aspects that are beyond your present competence. When it is appropriate, do not be afraid to say, "I don't know."

5. **Let the facts speak for themselves.** If you have done your homework and have collected an adequate supply of facts, the audience rarely will need your help in reaching an appropriate conclusion. Indeed, your case is made much stronger if the audience is allowed to draw its own conclusions

from the facts. Say that Madame X claims to have psychically *located Mrs. A's missing daughter and you have obtained a* statement from the police to the effect that her contributions did not help. Under these circumstances it can be counterproductive to assert that Madame X lied about her contribution or that her claim was "fraudulent." For one thing, Madame X may sincerely, if mistakenly, believe that her contributions did in fact help. In addition, some listeners may be offended by the tone of the criticism and become sympathetic to Madame X. However, if you simply report what Madame X claimed along with the response of the police, you not only are sticking to the facts, but your listeners will more likely come the appropriate conclusion.

6. **Be precise.** Good criticism requires precision and care in the use of language. Because, in challenging psychic claims, we are appealing to objectivity and fairness, we have a special obligation to be as honest and accurate in our own statements as possible. We should take special pains to avoid making assertions about paranormal claims that cannot be backed up with hard evidence. We should be especially careful in this regard when being interviewed by the media. Every effort should be made to ensure that the media understand precisely what we are and are not saying.

7. **Use the principle of charity.** I know that many of my fellow critics will find this principle to be unpalatable. To some, the paranormalists are the "enemy," and it seems inconsistent to lean over backward to give them the benefit of the doubt. But being charitable to paranormal claims is simply the other side of being honest and fair. The principle of charity implies that, whenever there is *doubt or ambiguity about a paranormal* claim, we should try to resolve the ambiguity in favor of the claimant until we acquire strong reasons for not doing so. In this respect, we should carefully distinguish between being wrong and being dishonest. We often can challenge the accuracy or validity of a given paranormal claim. But rarely are we in a position to know if the claimant is deliberately lying or is self-deceived. Furthermore, we often have a choice in how to interpret or represent an opponent's arguments. The principle tell us to convey the opponent's position in a fair, objective, and nonemotional manner.

8. **Avoid loaded words and sensationalism.** All these principles are interrelated. The ones previous stated imply that we should avoid using loaded and prejudicial words in our criticisms. If the proponents happen to resort to emotionally laden terms and sensationalism, we should avoid stooping to their level. We should not respond in kind.

This is not a matter of simply turning the other cheek. We want to gain credibility for our cause. In the short run, emotional charges and sensationalistic challenges might garner quickly publicity. But most of us see our mission as a long-run effort. We would like to persuade the media and the public that we have a serious and important message to get across. And we would like to earn their their trust as a credible and reliable source. Such a task requires always keeping in mind the scientific principles and standards of rationality and integrity that we would like to make universal. □

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September 7–9, 2001 • Praha, Czech Republic

The Congress will be held in the center of Prague in the main building of the Academy of Sciences of the Czech Republic on Národní street, close to the National Theatre. The program will include a sightseeing tour of Prague and an outdoor dinner.

The program of the congress will be divided into three thematic areas:

1. **Paranormal Scene in Europe — Comparison between Post-Communist and Western Countries**
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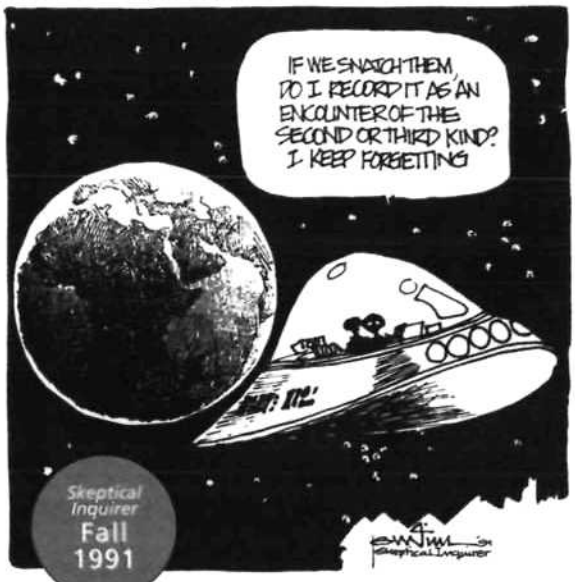
Even hard-nosed skeptics take time to have fun . . . here are some of the best SKEPTICAL INQUIRER *cartoons from the past 25 years.*

—*THE EDITORS*

THE FIRST CSICOP MEMBER

OUT THERE Rob Pudim



Skeptical Inquirer Fall 1991

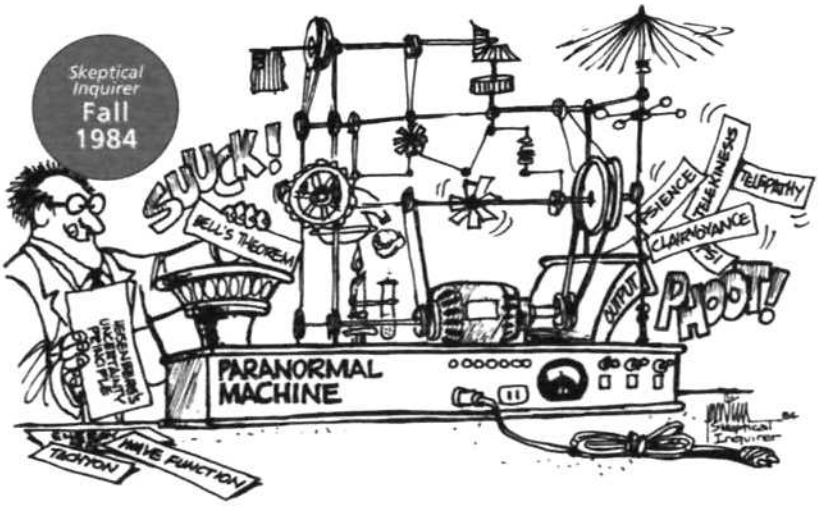
Skeptical Inquirer Summer 1989

JOHNSON ONCE MORE FAILS TO GRASP THE CONCEPT OF THE PARANORMAL.

OUT THERE Rob Pudim

Skeptical Inquirer Spring 1992

Skeptical Inquirer Winter 1982



Skeptical Inquirer Fall 1984

MAYFLY QUACKERY

Skeptical Inquirer Winter 1989

Our Species' Fatal Flaw?

KEN PAREJKO

The Spirit in the Gene: Humanity's Proud Illusion and the Laws of Nature. By Reg Morrison. Comstock Publishing, Ithaca, NY and London. 1999. ISBN 0-8014-3651-6. 286 pp. Hardcover, $27.

Some hypotheses are so audacious they nearly take your breath away. Heliocentrism must have sounded that way, five hundred years ago, with Earth spinning recklessly through space. Others include continental drift (while spinning recklessly, shifting beneath our feet), evolution by natural selection, the theory of relativity, and Big Bang cosmology. Reg Morrison's hypotheses may not be as grand as these, but they are just as audacious.

Morrison's book, *The Spirit in the Gene: Humanity's Proud Illusion and the Laws of Nature*, will not be a favorite of the clergy. Lynn Margulis praises it in her foreword, and I can imagine Richard Dawkins's wry smile as he reads it.

Morrison uses wide-ranging research and well-composed writing to argue that spirituality is a genetically determined trait, molded by natural selection to prevent our species from destroying the world. And not, as you might think, by providing us with the compassion to care and the wisdom to see and solve our problems. On the contrary, Morrison says, our "proud illusion" of being a special species, bearing God and religion's imprimatur, is a fatal flaw that will (pretty soon, actually) result in our own destruction, to the greater good of the world.

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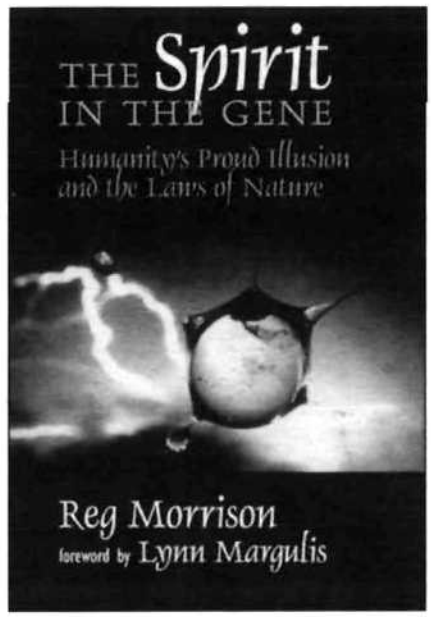
Morrison's arguments go like this: According to the Gaia hypothesis (which he buys into), Earth is a self-regulating superorganism. To prevent plague species like achaebacterial algae, rats, locusts, and humans from destroying



their environment, evolution has built doomsday flaws into all these species. He describes how early in Earth's history some bacteria evolved the ability to capture the energy of sunlight and use it to put carbon dioxide and water together into glucose: the first photosynthesizing algae. Unfortunately for them (though fortunately for us), oxygen was a byproduct of this reaction. This oxygen was toxic to early life, and clouded the oceans with rust, which acted as a feedback loop to bring the algae populations crashing down.

Likewise, rodents have a series of physiological mechanisms which decrease their birth rates as they get crowded. These are hormonal and behavioral changes which prevent them from completely destroying their habitats. And we humans?

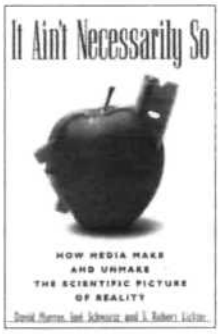
In his first two chapters Morrison describes a litany of human-caused environmental disasters, which with our exploding population mark us as a plague species. And what mole has natural selection planted in our genes, to prevent us from destroying Earth?

First, Morrison discusses growing and good evidence that complex personality traits have a strong genetic component. Is there a spirituality gene? Unlikely, but our tendency to fall back on mysticism, tribalism, and emotional answers to complex questions, like other such personality traits, is likely hidden in a number of places on our DNA. This inborn tendency to delude ourselves, and use ancient emotional responses when clear-thinking is better called for, has actually played a big part in our success. Combined with our intellect and the part cultural evolution plays in insulating us from our environment, this innate emotional tribalism has made us, in Morrison's words, "surely the most dangerous animal ever to walk the earth." And, "being

primarily founded on and driven by mystical beliefs of one kind or another, human civilization represents not so much the triumph of the mind over the body as the triumph of the gene over gene-threatening rational thought."

Cults, astrology, mysticism, conspiracy myths all mark us, in Carl Sagan's words, as "significance junkies." These are our responses to an unpredictable and chaotic world. More than that, they are clear evidence of our tendency to delude ourselves. It is this delusion itself which, according to Morrison, in the coming decades will result in our own inevitable catastrophic decline. For while reason might convince us that we must drastically change our ways, to protect ourselves and Earth's ecosystems, our "proud illusion" will likely prevent us from acting reasonably.

While he brings wide-ranging evidence, creative thinking, and a very readable style to fundamental questions of humankind's past and future, Morrison's arguments are not all equally convincing. Still, this anodyne to our present epidemic of "spirituality" is a provocative and audacious book, deserving close reading and ongoing discussion.



Being a Savvy Consumer of Science Reporting

P.A. LAMAL

It Ain't Necessarily So: How Media Make and Unmake the Scientific Picture of Reality. By David Murray, Joel Schwartz, and S. Robert Lichter. Rowman & Littlefield, Lanham, Maryland, 2001. ISBN 0-7425-1095-6. 249 pp. Hardcover, $24.95.

In *It Ain't Necessarily So*, the authors' goal is to give science news consumers the tools to evaluate news effectively by recognizing the media's use of hype and bad science. The authors reveal the inner workings of the news process, including its choices, judgments, biases, deletions, and framings as it reports on scientific research.

The book is organized as a series of case studies of scientific research reporting. The studies involved research results that had clear public policy implications and attracted media attention. The authors focus on coverage of studies of health and statistical descriptions of social phenomena because, they say, the science that drives public policy deals mostly with these two domains. The primary concern is with the print media. Murray et al. believe that the print medium is regarded as more authoritative and is more commonly cited by policymakers than are the electronic media. This assertion, however, is not well supported.

The book's three sections cover ambiguity in three areas: news, measurement, and explanation. Under each section are accounts of specific research findings: how they were generated and came to public attention; how journalists parsed, selected, and conveyed them; and how they could have been portrayed differently while remaining faithful to the same facts.

Many of us with science backgrounds are able to critically evaluate media reports of research findings. But we cannot evaluate reports that do not appear. For example, the federal government's National Criminal Victimization Survey (NCVS) showed that between 1993 and 1994 the combined rate for all sexual assaults fell by 13 percent. Murray et al. say that amid a mass of contentions of an epidemic of sexual violence directed against American women, the survey findings should have been big news. But they were not. The findings were ignored by the *New York Times* and the *Washington Post*, and to the authors' knowledge were covered most extensively in a ninety-four-word report in the *Pittsburgh Post-Gazette.*

One hypothesis as to why some stories are not covered is that they do not conform to a "template"—the template being "what editors and other people who are not on the ground have decided is The Story." Thus, if the template is that sexual assaults pose a severe, and possibly worsening, problem, evidence to the contrary will often be ignored or rejected. Another of the authors' hypotheses is that journalists—who often rely on press releases, rather than having the significance of data explained to them by researchers—can fail to understand the significance of the data.

In contrast to news stories that are ignored by the press, what is not very newsworthy, say the authors, sometimes makes headlines. Too often, research results that are preliminary or inconclusive receive front-page coverage. As they do with ignored stories, the authors provide examples of such coverage, the classic example being the media hype following the claim by Pons and Fleischmann of achieving cold fusion. These stories appear because of publicity efforts and the stories' fit with journalists' pre-defined templates.

Concerning the ambiguity of measurement, the authors focus on common problems with reports of survey results about crimes. If researchers' definition of a crime (e.g., child abduction) is broader than yours, and the news story does not tell you what definition researchers used, you may assume that the problem is more (or less) common than it actually is. Thus, the authors warn, reports about the frequency of various crimes should always be examined skeptically, until you know what

P.A. Lamal is emeritus professor of psychology at the University of North Carolina–Charlotte.

definition of the crimes are being used.

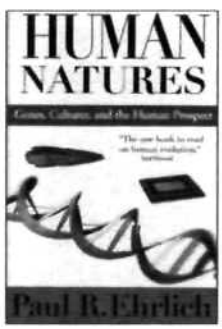
Another measurement problem involves the media's use of proxy, as opposed to direct, measures of phenomena. The authors acknowledge that the social and natural sciences frequently use proxies because they are unable to directly measure a behavior or phenomenon. But there is always the risk that the proxy may be an inadequate measure of the subject of study. Use of a proxy helped create the long debate about the possible health hazards posed by exposure to the electromagnetic fields (EMFs) produced by power lines and electric wiring. In much of the research, wire codes were used as a proxy for exposure to EMFs, and the authors explain how the use of the wire code proxy was unwarranted.

The problem is that the media, when reporting findings, often fail to point out the limitations of research resulting from these kinds of measurement problems.

The authors also provide examples of the media presenting only one interpretation of data when other interpretations are reasonable. With respect to polls, the media usually fail to address issues such as the influence of poll questions' wording and the way in which they are asked. Such variables can significantly determine which interpretation of the results is most warranted. Media reporting of various kinds of risks also often leaves much to be desired.

With respect to the ambiguity of explanation, Murray et al. maintain that the media often disparage research because of the researcher's personal convictions or sources of research funds. Scientific skeptics of global warming, for example, were criticized for research funded by the energy industry. But, the authors say, the important thing is to distinguish well-done from poorly done research. Examples are also given of the failure to consider alternative explanations when reporting findings.

The book concludes with an examination of what happens when research findings and news accounts intersect with public policy decision making, as well as a consideration of the presuppositions that guide journalistic choices. This is recommended reading for all members of the news media audience.



The Evolution of Who We Are

BY DANIEL GRASSAM

Human Natures: Genes, Cultures, and the Human Prospect. By Paul R. Ehrlich. Island Press/Shearwater Books, Washington, D.C., 2000. ISBN 1-55963-779-X. 531 pp. Hardcover, $29.95.

In writing *Human Natures* Paul Ehrlich set out to correct the erroneous assumption that all humans share a common value. That notion, he contends, "allows us to be painted in the popular mind as instinctively aggressive, greedy, selfish, duplicitous, sex-crazed, cruel, and generally brutish creatures with a veneer of social responsibility." While not denying *Homo sapiens'* capability to exhibit those behaviors, Ehrlich denies it as pre-programmed predilection. Human behavior is not a predetermined set of rules but a complex infrastructure, a "product of our histories, biological and cultural."

There has been much debate about the role genes play in human behavior, with many books and papers written in an attempt to understand to what extent human minds are "hard-wired." While respecting the gene's role in our evolutionary history, Ehrlich steadfastly disagrees with the idea of genes as a solitary explanation for our behavior. His argument, referred to as the "gene shortage" argument, is as follows: "Human beings have something on the order of 100,000 genes, and human brains have more than 1 trillion cells, with about 100–1,000 trillion connections between them. That's at least 1 billion synapses per gene, even if each and every gene did nothing but control the production of synapses (and it doesn't). Given that ratio, it would be quite a trick for genes typically to control more than the most general aspects of human behavior."

Ehrlich further says that even if genes did control all aspects of our behavior the resultant inflexibility would be crippling from an evolutionary position. What Ehrlich, among others, supports is the idea of gene/culture coevolution. *Homo sapiens'* survival is founded in their filling an evolutionary niche referred to as the cognitive niche. The cognitive niche gave our ancestors the ability to store information outside our genes. This socially transmitted information (behavior, beliefs, technology, art, et cetera) gave our ancestors an edge by allowing them to adapt to their environment by bypassing the traditional and slower genetic method. As Ehrlich sees it this nongenetic information increased the survival rate of our ancestors and created an evolutionary pressure for better cognition that was answered by both biology and culture.

The Great Leap Forward, an advance of *Homo sapiens'* technology accompanied by the introduction of art and massive population growth over a short time frame, has (at least) two competing theories. Ehrlich discusses both thoroughly but throws his support behind cultural evolution as the culprit. The competing theory is that our biological evolution brought on a complete change in brain

Daniel Grassam writes from Denver, Colorado.

structure, which gave *Homo sapiens* increased cognitive and/or lingual ability and that this led to the advancement seen in the Great Leap. The strongest argument against restructuring theory is the extremely short time frame, biologically speaking, for such a rapid and extensive change to have occurred. Definitive answers, however, are problematic because of the difficulty of tracing this type of information using the fossil record.

Whether it was a biological or cultural change that brought about the great advances in *Homo sapiens* technology may be unsettled, but the advancements of the past five hundred years surely point to our cultural evolutionary capabilities and show that our cultural evolution is outpacing our biological evolution. In some areas our cultural evolution overrides cornerstones of biological evolution. This opens a discussion about where our cultural evolution is taking us and what to do with that information. What, if anything, does our evolution tell us about ethics and morality? "Although the capacity to develop ethics is a product of biological evolution, there is nothing in that evolution that tells us what we should do . . . the actual ethics, morals, and norms of society—the products of that ethical capacity—are overwhelmingly a result of cultural evolution within that society."

In the final two chapters Ehrlich steps away from the known and the scientific in exchange for a call to action, dividing the actions into the tactical and strategic. From the tactical Ehrlich says "perhaps the most important single tactical evolutionary lesson . . . is that there is a dynamic relationship between *Homo sapiens* and the microorganisms that attack it." Ehrlich believes that the excessive use of antibiotics is creating a breeding ground for resistant strains of bacteria. He points to penicillin, once handed out indiscriminately to anyone with a sniffle, now being almost useless as an antibiotic. Our evolution has separated us so distinctly from our environment that we tend to forget that we are a part of the ecosystem. "Despite all the good things that have come out of human evolution, one thing is clear to me and to many of my colleagues who spend their time examining that predicament: our evolving human natures may be heading us toward the worst catastrophe in the history of *Homo sapiens.*" The steady demise of our ecosystems presents the greatest danger and is at the forefront of Ehrlich's strategic plan. To reverse this trend Ehrlich calls for a "conscious evolutionary process" whereby we would educate people in "understanding our evolutionary background and the biases it produces." Because our "cultural evolution, unlike biological evolution, is reversible," Ehrlich is hopeful that we may turn ourselves around.

Human Natures is a gratifying trip through the evolution of human natures. The copious notes provide enjoyable supplementary material, and the extensive references provide a good launchpad for additional research. Ehrlich has written an informative and socially responsible book that at no point becomes preachy or lets the science suffer for the opinion.

The Dish Dishes Up Real Life and Real Scientists

EDWARD SUMMER

It is so uncommon for scientists to be treated with marginal decency in commercial motion pictures that it's well worth mentioning when a new film comes along recognizing science workers as human beings. *The Dish*, an Australian film which opened in North America during March 2001, tells the fact-based story of three astrophysicists who tended to a large radio-telescope dish situated in the middle of a sheep pasture in Parkes, Australia, during the July 1969 Moon landing of Apollo 11. Without the cleverness and devotion of these otherwise ignored scientists, humanity would not have been mesmerized and awed by the real-time television signals of Neil Armstrong actually setting foot in Moon dust for the first time.

Edward Summer publishes The Dinosaur Interplanetary Gazette, *a science magazine.*

Australian scientists help broadcast the 1969 Moon landing in *The Dish*.

This is not a movie review, so I'll only say that this is a warm, touching, and gently humorous film that is far, far better than the sort of stuff that most often finds its way to our neighborhood movie screens.

The values of the story lie not in histrionics and special effects, but rather in affirming the fallibility and hard-won accomplishments of down-to-earth folks who just happen to make their living by calculating the trajectories and coordinates of objects hundreds of thousands of miles and millions of light-years away. Far too often, these same working stiffs are shown as madmen in white coats. All of us who are concerned about the popular depiction of scientists as people to be distrusted and feared know this only too well. When a film comes along that breaks the stereotype, it's reason to celebrate. In recent memory only *October Sky* (another true story about how a young boy's dreams of becoming an astronaut led him from the coal mines to the space program), and *Contact* (discussed previously in SI 21[6] November/December 1997) which has a fictional scientist heroine, deal with the intense problems of the nature of research, politics, and public perception.

We have every reason to be concerned about the portrayal of scientists and the scientific method or process in popular entertainment. Given the failure of American public education in the areas of science and mathematics, film and television are the main exposure that the average child or adult has to the mysteries of science. On one hand, PBS, The Discovery Channel, and the like generally do a good job of presenting real research, real science, and real facts in a digestible manner. On the other hand, short of reading journals, many of those television programs are the closest that we will all come to the workaday world of scientists.

While I genuinely enjoy science fiction like *Star Trek*, and *The X-Files*, not only are they not educational in any meaningful sense, but aside from inspiring a genuine "sense of wonder" about the unknown in the universe, they can actually trivialize the labors of real scientists. Without entering into the endless debate about whether or not *X-Files* really purports to be the "truth" (I think that it only purports to be storytelling), it's fair to say that the "real" science shown in *X-Files* is only a parody of laboratory research and professional investigation. There is the rub: it appears that only these sorts of highly dramatized and fictionalized stories attract and hold audiences. A film like *The Dish*, which not only tells a gripping story but also treats its subjects with respect and admiration, is a rare bird indeed!

Here is a tight little film that recounts what it's really like on a daily basis to sit at the controls of a huge radio telescope pushing little buttons and waiting endlessly for motors and gears to move the thing into position so that the poor, exhausted scientists can sit around for endless more hours listening to radio noise that doesn't seem to make much sense until it's tweaked out into something useful. More than that, it shows that the scientists themselves are as fallible as the next guy: one of the key players forgets to prime a fuel line and nearly screws up an entire NASA project! These scientists get cranky and forgetful, but they're also shy, sensitive and, in the end, brilliantly persistent and innovative, saving the day for NASA when nature itself supplies an unexpected obstacle. If I were a scientist, I wouldn't at all mind being immortalized in this fashion.

It was a no-brainer for a film like *Men in Black* to become a top grossing film, but if the movie studios can see that a small, intelligent, and respectful film like *The Dish* can turn a profit for them, perhaps they'll consider producing more films with "human" scientists to take their legitimate places alongside the endless stream of mad Dr. Frankensteins that are the traditional staple of big-buck box office. □

PSYCHIC VIBRATIONS
from page 20

more-or-less accurately, was a brief landing of a propane-powered hot air balloon, commonplace today but new and quite rare in 1964 (see http://php.indiana.edu/~lrobins/howisoco.htm).

Zamora compared the landed object's shape to an ellipse with a long horizontal axis, suggesting a balloon that was starting to collapse. In the excitement, Zamora ducked behind his cruiser, and lost his glasses. The object's shape when airborne looked like a teardrop. In fact, it has been established that the government was carrying out then-classified experiments using exactly such balloons in New Mexico in 1963 and 1964 (apparently the CIA was interested in using balloons for, among other things, quietly getting agents into, and out of, exotic locations). However, nobody has yet been able to tie a classified balloon experiment to the sighting's location and time. Zamora's statement that the object rose slowly, barely clearing the ground, and in taking off generated heat but "not nearly as much" as a rocket exhaust, sounds very much like a balloon ascending. Also, Zamora's observation that the flame seemed to strangely have little if any effect upon the ground might be explained if the flame were directed *upward* into the balloon (which is how hot air balloons are constructed), rather than thrusting downward toward the ground. The object took several seconds to rise to a height of about twenty feet, then suddenly the "propulsion system" was turned off, and the object flew off in total silence. Watching the object depart, Zamora radioed to the police station, "it looks like a balloon." While Robinson's explanation is still being analyzed and debated in skeptical UFO circles (see www.ufoworld.co.uk/v07.txt), it makes a lot more sense than Little Green Men. □

NEW BOOKS

Listing does not preclude future review.

The New Believers: Sects, 'Cults,' and Alternative Religions. **David V. Barrett.** Sterling Publishing Co., 387 Park Avenue South, New York, NY 20016-8810. ISBN 0-304-35592-5. 544 pp. Hardcover, $29.95. A comprehensive guide to new religious movements. The book takes a comparative religion approach; it treats no theological position as more true, valid, or sound than any other. The author says he has aimed not just for fairness but for accuracy. Part One deals with major issues of alternative religions, including what is a cult and what is a real religion, conversion and recruitment, problems for family members, problems for leaving a movement, and cult-watchers and experts. Part Two contains entries on individual movements, organized into five sections: Christian origins, Other "Religions of the Book" origins, Eastern origins, Esoteric and neo-Pagan movements, and personal development movements.

Quantum Leaps in the Wrong Direction. **Charles M. Wynn and Arthur W. Wiggins.** Joseph Henry Press, 2101 Constitution Ave. N.W., Washington D.C., 20418. 2001. ISBN 0-309-07309-X. 230 pp. Softcover. The first three chapters are devoted mostly to distinguishing science from pseudoscience, outlining the nature of scientific inquiry, and scientific reasoning. The remainder of the book has sections on UFOs, out-of-body experiences, astrology, ESP, and creationism. The book is largely an introductory text, good for younger readers (with plenty of cartoons) or those new to skepticism. Includes an index, glossary, and reading list.

Dreaming the Future: The Fantastic Story of Prediction. **Clifford A. Pickover.** Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228-2197. 2001. ISBN 1-57392-895-X. 452 pp. Hardcover, $28. A skeptical but sympathetic scientist and writer provides a sweeping reference to fortune-telling practices, ancient to modern, from astrology, palmistry, and tarot cards to readings of tea leaves and the shapes of holes in cheese to divining God's will by fire or flame. Humans have always wanted to know what the future holds, explaining the enduring lure of divination. Includes sections on Beyond Sticks and Stones; Mind, Myth, and Meaning; Nostradamus and Other Prophets; and Science and the Will to Believe. ("The Antinoüs Prophecies: A Nostradamoid Project," in the May/June 2001 SKEPTICAL INQUIRER is from this book.)

—Kendrick Frazier and Benjamin Radford □

ARTICLES OF NOTE

Coyne, Jerry A. "Creationism by Stealth." *Nature*, 410:745–746, April 12, 2001. A devastating critique of the Jonathan Wells book *Icons of Evolution: Science or Myth? Why Much of What We Teach About Evolution is Wrong.* Coyne reports that Wells, despite having a doctorate in biology, is no objective scientist regarding evolution. A personal history Coyne found not in this book but on a Unification Church Web site says in 1976 Wells was a seminary student in the church and answered founder Sun Myung Moon's call. "Father's [Moon's] words, my studies, and my prayers convinced me that I should devote my life to destroying Darwinism." Moon arranged for Wells to enter a PhD program. As Coyne says, "The University of California supplied Wells with his weapon, a PhD in biology." Coyne calls Wells's book the latest salvo in "the eternal religious assault" on Darwin. "The book, aimed at the non-specialist, masquerades as a scientific critique of classic examples of evolution, but is actually a polemic intelligently designed to please Father Moon. *Icons* is a work of stealth creationism, and strives to debunk Darwinism using the familiar rhetoric of biblical creationists, including scientific quotations out of context, incomplete summaries of research, and muddled arguments. . . . But because Wells has scientific credentials, studiously avoids mentioning religion or God (who appears only under the alias 'intelligent design'), and presents his book as an objective critique. . ., it is easy for the non-scientist to be taken in."

Gomes, Joseph. "The Prophet Motive." *Brill's Content*, 4(1): 42. February 2001. A brief article about alleged psychic Sylvia Browne and her televised claims of success as a psychic detective. Both Larry King and Montel Williams have permitted her to make claims ranging from "the vague and unverifiable to the patently false."

Hanson, Barry J. "The Kensington Runestone." *Journal of the West*, 40(1): 68–80. Winter 2001. The runestone, found in a Minnesota farmer's field in 1898, ostensibly records a Norse expedition in 1362. It is generally considered a modern fraud but Hanson says it has never been properly studied by geologists. A brief sidebar reports a new study with an electron microscope indicating the stone was underground for more than fifty years after the runes were carved.

Leakey, Meave G., Fred Spoor, Frank H. Brown, Patrick N. Gathogo, Christopher Kiarie, Louise N. Leakey, and Ian McDougall. "New Hominin Genus from Eastern Africa Shows Diverse Middle Pliocene Lineages." *Nature*, 410: 433–440, March 22, 2001. This is the original scientific paper of the widely reported discovery by a team in Africa of the 3.5 million-year-old fossil remains of *Kenyanthropus platyops*, most likely a new genus and species of early human ancestor. This finding suggests that Africa was inhabited by more than one species of hominin.

Lieberman, Daniel E. "Another Face in Our Family Tree." *Nature*, 410: 419–420, March 22, 2001. Lieberman discusses Leakey et al.'s African finding of *Kenyanthropus platyops*, and the difficulty and confusion surrounding attempts to classify it.

Lilienfeld, Scott O., James M. Wood, and Howard N. Garb. "What's Wrong with This Picture?" *Scientific American*, May 2001, pp. 81–87. Psychologists often use "projective tests" such as the famous Rorschach inkblot test, human figure drawings, and the thematic apperception test, to assess personality and mental illness. But research reported in this article says the instruments are frequently ineffective for those purposes. "Even seasoned professionals can be fooled by their intuitions and their faith in tools that lack strong evidence of effectiveness," conclude the authors. (Lead author Lilienfeld's September/October 1999 SKEPTICAL INQUIRER article "Projective

Measures of Personality and Psychopathology: How Well Do They Work?" is one of six articles referenced.)

Loftus, Elizabeth, and William Calvin. "Memory's Future." *Psychology Today*, March/April 2001. Will technology change the way human memory works? Two experts explore the topic and ponder what has been learned about memory and what the future might hold. Begins Loftus: "A flimsy curtain separates memory from imagination."

McCrone, John. "Tales of the Paranormal." *New Scientist*, 169(2280): 46–49. An interview with Robert Morris, who runs the Koestler Parapsychology Unit at the University of Edinburgh. Morris claims that the results of Ganzfeld research offer "millions to one" odds against paranormal effects not existing.

Midgley, Mary. "Being Objective." *Nature*, 410:753, April 12, 2001. A philosopher asks, "What does it mean to be objective in science?" Physics and inanimate matter aren't the whole of science. "Life, consciousness, and purpose are natural facts in the world like any others, and in some contexts they are vitally important facts." Scientists need to deal with the greater complexity of living subjects by "watching for the obvious sources of bias, not by suppressing our natural responses altogether." She says scientists can combine thorough rigor with sympathy and respect for the people or animals they study. To do otherwise "overlooks something central to the scientific spirit."

Norlander, Charles. "John Edward on His Own." *Time*, March 26, 2001, letters to the editor. The executive producer of the television show "Crossing Over with John Edward" responds to Leon Jaroff's March 5 skeptical article about psychic medium John Edward.

Paul, Annie Murphy. "Self-Help: Shattering the Myths." *Psychology Today*, 60–68, 82, March/April 2001. Bookstores and the Internet are spilling over with advice from the latest self-help gurus. This report examines five distortions in typical self-help books (e.g., "Vent your anger and it will go away," "Self-affirmations will help you raise low self-esteem"), compares them to what researchers say, and offers suggestions for what to do instead.

Australasian Science Special Issue on 'Scepticism'

The January/February issue of Australasian Science, *volume 22, number 1, is a special issue on "Scepticism." Six specific articles in it are summarized below. There were also short articles on astrology, crystals, nutrition, global warming, and alternative medicine.*

Eddie, Laurie. "Bent Spoon For Breatharian," p. 40. Australian Jasmuheen claims to live without food, but when tested she became seriously ill in three days.

Kocsis, Richard. "Psychological Profiling in Murder Investigations," pp. 26–27. The case file for a murder was given to groups of profilers, detectives, psychologists, scientists, and psychics, along with a questionnaire about the murderer. A separate randomly selected group filled out the questionnaire without the case file (based on "social stereotypes," what the person-on-the-street would expect to be true about the murderer). The profilers were significantly more accurate than the other groups. The psychics were statistically no more accurate than the group working from common sense. Sadly, while twenty willing psychics were found, only five profilers from around the world agreed to be tested.

Luntz, Stephen. "Backwards Approach to Saying What You Mean," p. 39. Australian David Oates offers to analyze backwards speech for a fee. Linguists have demonstrated that few people can hear the same words as Oates, unless they have been told what to expect.

Meier, Peter. "Acupuncture: Testing the Sham," pp. 33–34. Meier is developing methods to test the physiological responses to acupuncture. For example, does a needle in the point "Heart 7" in the wrist affect the heart more than a needle in the point "Large Intestine 4"? And do "true" acupuncture points have more physiological effects than the "sham" points used as placebos?

Nolch, Guy. "Psychic at $5 Per Minute," pp. 24–25. A lighthearted look at so-called psychic phenomena, keyed to the Third Sceptics World Convention in Sydney, Australia. Nolch discusses Richard Wiseman, Bob Steiner, and James Randi, among others.

***Plimer, Ian.* "Creation Science: Neither Science Nor Religion,"** pp. 36–37. Australian geologist Plimer is best known for taking a creationist to court on fraud charges. He argues that creation science is really politics. He mentions creationists who publish scholarly articles saying Earth is millions of years old and creationist articles saying Earth is only a few thousand years old.

—Robert Lopresti

Pursell, Chris. "'Crossing Over' Sensing Skeptics." *Electronic Media*, 20(10): 3. March 5, 2001. A brief article about John Edward's show *Crossing Over*. Criticism, led by *Time* magazine, has apparently not changed Studios USA's plans to put the show into syndication this fall.

Russo, Eugene. "Fighting Darwin's Battles: Symposium Marks Evolutionist Victory, Anti-evolution Growth." *The Scientist*, 15(6): 1, 13, March 19, 2001. The American Association for the Advancement of Science held a February symposium about creationist challenges to the teaching of evolution. The symposium marked the twentieth anniversary of the landmark *McLean* v. *Arkansas Board of Education* trial, which led to invalidation of an Arkansas statute requiring equal classroom time for evolution and creationism. Stephen Jay Gould and other veteran participants in that trial spoke at the symposium. They all reported on important discoveries that advance evolution; at the same time, creationism movements have increased their budgets and bases of support. The latest challenge, "intelligent design theory," is not science and should not be included in science curricula, warned anthropologist Eugenie Scott.

Sevrens Lyons, Julie. "No Cure for the Con: Internet Access, Desperate Consumers, Lax Regulations Combine to Create a Golden Age of Quackery." Knight Ridder newspapers, March 12, 2001. From dietary supplements and herbal remedies to health aids and alternative therapy, "quackery is as large an industry as it ever was." This thanks in part to the Internet, which gives con artists anonymity. Excellent syndicated newspaper report on the golden age of quackery we're in, with a sidebar from the Quackwatch Web site offering eight "Symptoms of a Scam."

Taylor, Robin. Review of *Dogs that Know When Their Owners Are Coming Home: And Other Unexplained Powers of Animals* by Rupert Sheldrake. *The Journal of Parapsychology*, 65(1): 90–96. A strongly critical review of Sheldrake's book. "The book is without scholarly merit and, apart from a newer collection of anecdotes of interesting psychic animal stories, pretty much without substance." Taylor accuses Sheldrake of simply putting this book out to increase his publication record. And he claims that the book will put serious researchers off this topic.

Zalar, Michael A. "16th-Century Cartography, Plat Maps, and the Kensington Runestone." *Journal of the West*, 40(1): 62–67. Winter 2001. A companion piece to the Hanson article above. While linguists have rejected the runestone, Zalar argues that the description of the Northern region found in early fifteenth-century maps demonstrate that Europeans had been to Hudson Bay and returned to tell about it.

—Robert Lopresti, Kendrick Frazier, and Jodi Chapman □

SCIENCE BEST SELLERS

Top Ten Best Sellers in **New York**

1 ***Guns, Germs, and Steel: The Fates of Human Society***
Jared Diamond
W.W. Norton & Company

2 ***Galileo's Daughter: A Historical Memoir of Science, Faith, and Love***
Dava Sobel
Penguin USA

3 ***A Primate's Memoir***
Robert M. Sapolsky
Scribner

4 ***In Wake of the Plague: The Black Death and the World It Made***
Norman F. Cantor
Free Press

5 ***The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory***
Brian Greene
Vintage Books

6 ***Mauve: How One Man Invented a Color That Changed the World***
Simon Garfield
W.W. Norton & Company

7 ***Genome: The Autobiography of a Species in 23 Chapters***
Matt Ridley
Harpercollins

8 ***Flight: My Life in Mission Control***
Chris Kraft
E.P. Dutton

9 ***The Selfish Gene***
Richard Dawkins
Oxford University Press (Trade)

10 ***The Design of Everyday Things***
Donald A. Norman
Currency/Doubleday

By arrangement with Amazon.com, May 2001.

Undecidability

RALPH ESTLING

"I used to be indecisive, but now I'm not so sure."
—Boscoe Pertwee

A friend once presented me with a riddle: In the sequence OTTFF, what comes next? I replied, anything. My friend said no, SSENT came next, because what was clearly meant were the initial letters (in English) of the first ten integers.

I in turn remonstrated that this was one possible solution among an infinite possibility of solutions, that it would be the only possible answer if and only if the riddle stated that what it was referring to were the initial letters (in English) of the first ten integers, which admittedly would have rendered the riddle rather useless as a riddle. Nevertheless, it has its value as it stands, in logic.

Logically speaking, the additional information is essential for the answer the riddler wants. Without it, *any* answer would be as right as any other. Some answers would carry more meaning than others; some, the vast majority, would carry no discernible meaning at all, but meaningful or not, there is no valid way of deciding what the "right" answer is without the additional, riddle-effacing data.

To this day my friend considers me illogical and just plain contrary, even after I discovered that a similar riddle presented to the great philosopher Ludwig Wittgenstein had met with the same response as I had given, something I hadn't known at the time but which I found satisfying to learn.

The existence of undecidability is as important—and perhaps more important—than learning what is true and what is false.

What can we learn from this? We can learn of the existence of undecidability, which is as important—and perhaps more important—than learning what is true and what is false.

Logic and mathematics dictate that in the equation $x + 1 = 2$ there exists a limited number of possible solutions for x, in this case only one. But when we are faced with $x + y = 2$ there are an infinite number of solutions. The task of science is to determine which of the two cases reflects the true state of affairs and, if it is the first, to seek to achieve the one and only indisputably right answer. But the real problem is that it may not be possible to determine which is the case.

There is more than just the dilemma that mathematicians call the non-computable questions that we *know* cannot be solved even with an eternity in which to work on them and an infinite number of computers. Heisenberg, Gödel, Turing, and Chaitin have shown that some questions simply have no solution, even though the question is perfectly meaningful. But *knowing* something to be unknowable, non-computable, is still better than being unable to decide whether it is or not. Knowing that Heisenberg's indeterminacy, Gödel's incompleteness, Turing's halting problem, and Chaitin's incompressibility are certainly the case in this or that instance is a form of knowledge. Knowing we are up against a brick wall is very useful. But if there remains the niggling doubt about the wall's steadfastness under some perhaps indescribable, uncontemplatable circumstance, we are in existential hell, where we may or may not have free will, where our course of action, our ability to *know*, may or may not be fully predetermined. It is a no-win situation with bells on. For we can't even know for a fact that we have lost. We are in eternal limbo, or rather, we can't be absolutely sure we're in limbo or not. That, in a nutshell, is undecidability.

The question is, does the universe present us with this sort of riddle because it is intrinsically unknowable

Our occasional essayist Ralph Estling writes from Ilminster, Somerset, England.

whatever the level of intelligence brought to bear on it? Is it *always* possible to know if all meaningful questions that can be raised are solvable or not, without first working through eternity to find out? We know that *some* meaningful queries fall into the category of insoluble, but how can we determine that this or that *particular* query is or isn't? We are thrown back on the too-oft-quoted reflection of J.B.S. Haldane (too-oft-quoted by him, among others) that the universe may not only be queerer than we imagine, but queerer than we *can* imagine. To which I can only add, how can we decide between the two possibilities?

We know that some meaningful queries fall into the category of insoluble, but how can we determine that this or that particular query is or isn't?

Are you beginning to get the picture? If so, it's worse than that. Because it's no help to try escaping the dilemma by shrugging off and remarking that human logic and comprehension are, after all, not the be-all and end-all, as some philosophers have, happily (Kant) or unhappily (Schopenhauer). We can never know the thing-in-itself, Kant concluded, with a sigh of profound relief that the matter was now safely knowable, and Schopenhauer agreed, with *his* sigh of capitulating despair. End of problem. Oh really?

Well then, how can we be certain, so absolutely sure, that human thought cannot (eventually if not now) *be* the be-all and end-all? The universe is rather large but the laws that govern it are few and their complexities are unlikely to be infinite. There may be 10^{80} atoms in the known universe but each and every one of them obeys exactly the same rules. The workings of the universe, as the physicist John Barrow reminds us, is "the complicated coming together of many simple things." Corral and come to comprehend the simple, and the complicated will come to you of its own accord. Maybe.

The feeling that humanity will not ever, no matter how long it lasts, attain a position of workable knowledge of all the universe's operations and functions is religious, and one thing we *can* be pretty sure of is that conclusions based on a religious motive are at best suspect, and probably worse.

No, undecidability will not be dismissed out of hand so easily, even when our greatest philosophers and theologians pronounce that it should be, because it makes things a great deal easier for them. This is because then the argument goes away (which is what philosophy and theology is all about), and we can all go home to bed, safe in the knowledge that humans are and will always be incapable "by the nature of things" of knowing all that is knowable. Surrender in the face of odds declared to be overwhelming comes as a great relief to minds incapable of knowing whether the opposition is really insurmountable or not. Optimists like Kant and pessimists like Schopenhauer and all their friends meet in mystic union and, like the Ouroboros snake swallowing its own tail, swallow theirs, agree with handshakes all around that nothing more can possibly be said, their mouths being full, their brains being devoured. But alas. Mystic fulfillment, however satiating, will never alter the fact that no matter how fast or in which direction we turn, our arse is still behind us.

Let me conclude with these words of wisdom: A material, palpable backside counts for more, so far as reality goes, in a universe where spiritual essences seem only to reside within the realms and confines of squishy gray matter within the skulls of squishy gray men, the peddlers of unreason and the hucksters of false hopes and idle dreams.

At any rate, that *may* be the case. . . □

The Young Skeptics Program

In an effort to promote science and skepticism among all generations, the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), is pleased to announce the launch of the Young Skeptics Program. The Web-based program is geared towards students, parents and educators.

CSICOP.org/youngskeptics

The goals of the Young Skeptics Program are:

- To promote science and skepticism within all facets of society and among all generations.
- To provide multiple outlets for young people to learn and involve themselves in science, skepticism, and critical inquiry.
- To work with parents, teachers and students in an effort to promote learning, defend and advance science education, and encourage critical thinking in all areas of life.
- To help young people make sense of the world by developing the tools and gathering the information to navigate through the nonsense effectively.
- To nurture curiosity, wonder, and the imagination while sharing in the fascination of reality and the excitement our universe has to offer.
- To explore extraordinary claims and investigate unexplained phenomena, while enjoying ourselves in the process.
- To inspire future generations to proudly carry the torch of science and reason and keep the flame burning bright for years to come.

For more information please contact Program Director Amanda Chesworth at **a.human@mindspring.com**

The Condemned Meta-Analysis on Child Sexual Abuse

Good Science and Long-Overdue Skepticism

BRUCE RIND, ROBERT BAUSERMAN, AND PHILIP TROMOVITCH

In July 1999, the prestigious journal *Psychological Bulletin* published our review of fifty-nine studies that had examined psychological correlates of child sexual abuse (CSA) (Rind, Tromovitch, and Bauserman 1998). We soon achieved an unexpected honor: our paper was unanimously condemned by Congress. In the aftermath, SKEPTICAL INQUIRER has published two commentaries, one denouncing Congress (Berry and Berry 2000), and the other denouncing our study (Hagen 2001). We would like to offer our own thoughts about this astonishing story of politics, pressure, and social hysteria—the antitheses of critical and skeptical thought.

We conducted our research in the spirit of scientific skepticism, an attitude sadly missing in the CSA panic that arose throughout much of the 1980s and early 1990s. Beginning in 1984, sensational cases of satanic ritual abuse in daycare centers proliferated in the U.S., from McMartin in the West, to Fells Acres in the Northeast, to Little Rascals in the South. Staff workers were accused of such things as assaulting four-year-olds with swords and curling irons, forcing them in ritualistic style to consume feces and drink the blood of sacrificed babies, and molesting them in outer space or on ships at sea surrounded by sharks trained to prevent them from escaping. Meanwhile, by the late 1980s, a billion-dollar recovered memory movement had developed, and diagnoses of multiple personality disorder (MPD) mushroomed. All over the country, women were entering therapy with vague complaints such as feeling unhappy without knowing why, then emerging with "recovered memories" of bizarre childhood victimization—such as being sexually assaulted with hardware tools or vegetables—sometimes for many years, even decades, without "remembering." Often, these women were led to believe that this purported victimization had fragmented their personalities into a dozen, a hundred, or even a thousand alters.

Yet, over time, skeptics emerged—social scientists, lawyers, and others who questioned the stories coming from daycare cases and therapists' offices. They provided empirical evidence showing how even bizarre memories can be implanted, how children can be manipulated and coerced into telling preposterous stories, how people can be induced to believe they have thousands of "personalities." Daycare cases ceased; convictions were overturned; some of the more egregious practitioners of MPD therapy were successfully sued for malpractice. But few people were willing to critically examine the core assumptions that led to these hysterical epidemics: that child sexual abuse is distinctively horrible (more horrible than any other traumatic experience or than family pathology), inevitably leaving scars that last throughout life (at least, without therapy). It was time to examine those assumptions.

Freud was the first to formalize a relation between CSA and psychological maladjustment. In his "seduction theory," he claimed that *all* adult neuroses are traceable to premature sex with an older person. He based this notion on a dozen or so patients, whom he pressured to recall seduction episodes using the same discredited techniques that would later be used in modern recovered memory therapy. He soon abandoned his theory, and it lay dormant until the women's movement of the 1970s, where it was revived by advocates and victimologists who found political and economic value in it for attacking the "patriarchy" and increasing a patient base.

As historian Philip Jenkins (1998) documented, virtually overnight in the 1970s a new orthodoxy emerged, in which CSA was elevated to the most destructive experience a child could have. Who is a "child"? CSA came to include any kind of sexual encounter between a minor under eighteen and someone five or more years older. And what is "abuse?" Victimologists began

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with rape and incest, but then stretched definitions of CSA to include noncontact episodes (e.g., flashing), sex between children of differing ages, and episodes of mature adolescents willingly participating in sex with older teens or adults. Yet they maintained that all these encounters were traumatizing, using dramatic analogies such as slavery, head-on car crashes, being mauled by a dog, and torture to convey their belief about CSA's nature.

But sex, in general, is not like being mauled by a dog or torture, which are always painful and traumatic. Sex is often just the opposite—the most pleasurable experience one can have. It therefore cannot be assumed a priori that a fourteen- or fifteen-year-old, for example, will react with trauma rather than pleasure just because his or her partner is older. In fact, teens of this age often do not react as the orthodoxy insists they must, as the following example illustrates. It was related by Dan Savage, in reaction to the attacks on our study, in his nationally syndicated column "Savage Love" (July 29, 1999):

> Why is this controversial? Speaking as a survivor of CSA at fourteen with a twenty-two-year-old woman; sex at fifteen with a thirty-year-old man—I can back the researchers up; I was not traumatized by these technically illegal sexual encounters; indeed, I initiated them and cherish their memory. It's absurd to think that what I did at fifteen would be considered "child sexual abuse," or lumped together by lazy researchers with the incestuous rape of a five-year-old girl.

Stories like Savage's are far from rare, but they are never incorporated into victimological models.

Throughout the 1970s, the "victimologists" gained power and resources. The Child Abuse Treatment and Prevention Act of 1974 provided funding to stem the problem of physical abuse and emotional neglect. By 1976, its focus shifted largely to CSA. Victimology flourished as a result, producing hundreds of studies supposedly verifying CSA assumptions. But these studies consistently violated fundamental principles of scientific methodology in order to reach the expected conclusions. They mostly used highly unrepresentative clinical case studies, yet generalized with little qualification to the whole population (external validity bias). Even though they repeatedly found that people with a history of sexual abuse often came from poor or chaotic family and social environments, where physical abuse, emotional neglect, and delinquency were frequent, they generally ignored or downplayed these factors, attributing all or most current adjustment problems to the CSA (internal validity bias). In noting that CSA was associated with having symptoms of mental distress, they usually failed to indicate to what degree, leaving the impression that the "impact" is always dramatic (precision bias). Finally, literature reviews often selectively cited findings that supported victimological assumptions, but gave short shrift to contradictory findings (confirmation bias).

Our study was designed to overcome these biases. To improve external validity, we examined college samples, far more generalizable than clinical samples (half the U.S. adult population has had some college). To improve internal validity, we systematically examined family environment to see whether CSA continued to be associated with poorer adjustment when taking this into account. To improve precision, we used meta-analysis, a statistical procedure that transforms statistics from each study into a common metric indicating the magnitude of association of a relation of interest, and then combines these. And to avoid confirmation bias, we used all relevant quantitative information on problems of adjustment, rather than selecting only some findings.

We hypothesized that, if CSA is like torture, and if it produces the lasting effects claimed by victimologists, then the association between CSA and current adjustment problems should be large regardless of the population sampled (even in the relatively well-functioning college population), and that this association should remain robust even after taking into account other potential causes of poorer functioning (e.g., family environment). Moreover, if CSA is as traumatic as being mauled by an attack dog, then nearly 100 percent of victims should report that the experience was negative—indeed, devastating.

However, *none* of these predictions were supported. CSA was related to poorer adjustment, but the magnitude of the relation was small, not large. Family environment (e.g., physical abuse, emotional neglect) explained poorer adjustment ten times better. When we statistically controlled for the impact of growing up in a terrible family environment, the relation between CSA and adjustment often vanished. For males especially, CSA, far from being 100 percent negative, was reported as being mostly positive or neutral—a major contradiction to the victimological model. These findings were not related to the type of sex (e.g., mild touching versus intercourse), but they were related to level of force and relatedness—child victims of repeated acts of incest, or of acts brought about by force or threats, did have more psychological and emotional problems later in life. But the assumption of victimologists that *all* kinds of sexual experiences in childhood and adolescence have lasting and inevitably negative consequences was clearly wrong.

Because many men said that they did not find "child sexual abuse" to be "abusive," that is, harmful or traumatic, and because of comments by reviewers, the journal editor handling our paper requested that we reformulate the CSA construct in our final draft. CSA, as currently defined, had poor construct validity—that is, being told that someone was "sexually abused" in "childhood" was not enough to predict anything about that person's reactions or later adjustment. Constructs in science that are not predictive are not useful. Therefore, the editor asked us to redefine CSA, based on our findings. We complied, suggesting, for instance, that scientists not use the term "child sexual

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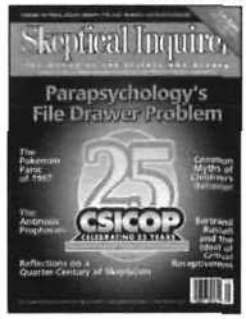

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abuse" to include teenagers who consented and enjoyed the sex. This reformulation both improved construct validity and occasioned moral outrage.

Conservative radio host "Dr. Laura" attacked us for months on her syndicated show. The Family Research Council, a conservative Christian advocacy group, mobilized conservative congressmen to pressure the American Psychological Association (APA) to repudiate our study. And a recently formed organization of victimologists who had long advocated the validity of recovered memories and MPD (they called themselves, rather grandly, the Leadership Council for Mental Health, Justice and the Media) fed Dr. Laura and the congressmen distortions of our research that were used as sound bites in attacking our study and the APA. The most notorious of these was that 60 percent of our data came from one single outdated study. The APA, which initially defended our publication as a "good study," eventually submitted to pressure and made concessions to the conservative congressmen and psychotherapists who were so angry. Raymond Fowler, the APA's chief executive officer, indicated to us that he had no alternative, because he was "in hand-to-hand combat with congressmen, talk show hosts, the Christian Right and the American Psychiatric Association." And so the APA issued a statement condemning child sexual abuse (as if we had endorsed it!), disavowing the article, and promising that it would be re-reviewed by another scientific organization. This statement placated Congress, which praised the APA in the same breath it repudiated us.

And, indeed, our study was re-reviewed by the American Association for the Advancement of Science (AAAS), America's largest science organization. The panel found no fault with our methods or analyses, but reported that they did have "grave concerns" with how our article was politicized and misrepresented by our critics, whom they rebuked for violating public trust by disseminating inaccurate information. Our critics, who were expecting the AAAS to denounce our study, were notably silent.

We have extensively debunked common criticisms of our study (see Rind, Tromovitch, and Bauserman 2000; Rind, Bauserman, and Tromovitch 2000). We showed that the Leadership Council's critique was little more than a "kitchen sink" attack, throwing every possible complaint our way irrespective of accuracy, relevance, or significance. Advocates of recovered memories are not especially known for their statistical sophistication and methodological rigor, and accordingly their complaints revealed strained attempts to discredit our findings rather than serious efforts to advance knowledge. An upcoming issue of *Psychological Bulletin* contains another of their mistaken critiques, along with our refutation. None of their objections have yet affected our basic conclusions.

The attacks by conservatives and victimologists, in our view, were all grounded in maintaining their strongly held ideological beliefs and, in the case of therapists, their practices. A critique of a different nature, appearing recently in SKEPTICAL INQUIRER by Margaret Hagen (2001), positioned itself as the view of a true skeptic, one more concerned with identifying problems in our study than with being politically correct. Hagen certainly diverges from most victimologists in acknowledging her own personal causes: that there is an important difference between children and teens in matters of sex, that calling men who are attracted to mature teens "pedophiles" is misleading, and that U.S. age of consent laws and other age limits are inconsistent and illogical. But because many of the errors she made in interpreting our article are so common, and so antithetical to true skeptical inquiry, we would like to respond to them.

First, Hagen asserted that we politically undermined her causes with our "sweeping reformulation" of the CSA construct, which, she said, was not driven by the findings of our meta-analysis. As we noted, we reformulated the notion of CSA as a result of the peer-review process, wherein the concern was *with the validity of the construct based on our findings*. This "sweeping reformulation" was thus not to advance some "socio-political agenda," as Hagen repeatedly accused us of doing, but to comply with an editor's request to advance science. We pointed this out in our commentaries on the controversy (see both Rind et al. 2000 articles); unfortunately, Hagen was not aware of these or had not read them. In those commentaries, we also addressed thoroughly the issue of consent, another criticism of Hagen's. The primary studies we reviewed examined "simple consent," as opposed to "informed consent," which implies assent without sophisticated knowledge of consequences. Simple consent moderated outcomes in these studies, in our meta-analysis, and has in other research as well. Because of its predictive value, it is a valid scientific construct. The "informed consent" argument is a red herring.

Then Hagen attacked our use of self-reports, calling them "notoriously unreliable." Sometimes they are; that's why good interviewers take this into consideration in designing surveys. But you don't get to dismiss self-reports you don't like and accept the ones you do like. Everyone accepted self-reports of *negative* reactions to CSA; why then are self-reports of neutral or positive reactions the only ones that are "notoriously unreliable?" Does Hagen believe that people's retrospective positive reports of a fine meal or negative reports of a painful medical procedure are to be dismissed as being unreliable? We doubt it. Nonnegative self-reports of CSA are highly informative, because they contradict what must be if CSA is by nature invariably a "fate worse than death."

Finally, Hagen, like other critics, attacked us for our use of meta-analysis, a method, she claimed, that researchers use to build "insubstantial mountains

out of statistical molehills." In fact, our study went in the reverse direction, breaking mountains down into molehills, rendering her metaphor miscast. Like others who are unfamiliar with this method, she believes that meta-analysis combines "apples and oranges" and is blind to "good apples and bad apples." Actually, this is a criticism that applies even more strongly to more traditional qualitative reviews, where the researcher subjectively compares various studies. In meta-analysis, it is possible to test whether combining different measures (apples and oranges) or good and bad studies matters. If it does, the variability in results becomes large. That was *not* a problem in our study.

Hagen, along with many psychotherapists, thinks that in the final analysis, our study doesn't tell us much about child sexual abuse and its aftermath. We disagree. Our study brought rigorous and skeptical attention to an issue that has spun out of control, into what Jenkins (1998) called a "moral panic." Victimologists are advocates, not scientists. There is certainly a place for advocacy, as long as it is not confused with science—and as long as public policy is informed by the best scientific information available, rather than by unvalidated beliefs, however passionately held.

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NOTES OF A FRINGE-WATCHER *from page 14*

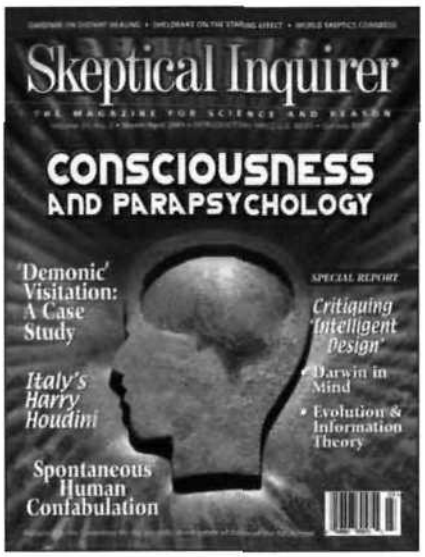
that every time Carnap expressed an opinion, Popper felt compelled to come forth with an opposing view, although it usually turned out to be the same as Carnap's but in different language. Carnap once said that the distance between him and Popper was not symmetrical. From Carnap to Popper it was small, but the other way around it appeared huge. Popper actually believed that the movement known as logical positivism, of which Carnap was leader, had expired because he, Popper, had single-handedly killed it!

I have not read Popper's first and only biography, *Karl Popper: The Formative Years (1902–1945)*, by Malachi Haim Hacohen (2000). Judging by the reviews it is an admirable work. David Papineau, a British philosopher, reviewed it for *The New York Times Book Review* (November 12, 2000). Here are his harsh words about Popper's character and work:

> By Hacohen's own account, Popper was a monster, a moral prig. He continually accused others of plagiarism, but rarely acknowledged his own intellectual debts. He expected others to make every sacrifice for him, but did little in return. In Hacohen's words, "He remained to the end a spoiled child who threw temper tantrums when he did not get his way." Hacohen is ready to excuse all this as the prerogative of genius. Those who think Popper a relatively minor figure are likely to take a different view.
>
> When Popper wrote "Logik der Forschung," he was barely thirty. Despite its flawed center, it was full of good ideas, from perhaps the most brilliant of the bright young philosophers associated with the Vienna Circle. But where the others continued to learn, develop and in time exert a lasting influence on the philosophical tradition, Popper knew better. He refused to revise his falsificationism, and so condemned himself to a lifetime in the service of a bad idea.

Popper's great and tireless efforts to expunge the word *induction* from scientific and philosophical discourse has utterly failed. Except for a small but noisy group of British Popperians, induction is just too firmly embedded in the way philosophers of science and even ordinary people talk and think. Confirming instances underlie our beliefs that the Sun will rise tomorrow, that dropped objects will fall, that water will freeze and boil, and a million other events. It is hard to think of another philosophical battle so decisively lost.

Readers interested in exploring Popper's eccentric views will find, in addition to his books and papers, most helpful the two-volume *Philosophy of Karl Popper* (1970), in the Library of Living Philosophers, edited by Paul Arthur Schilpp. The book contains essays by others, along with Popper's replies and an autobiography. For vigorous criticism of Popper, see David Stove's *Popper and After: Four Modern Irrationalists* (the other three are Imre Lakatos, Thomas Kuhn, and Paul Feyerabend), and Stove's chapter on Popper in his posthumous *Against the Idols of the Age* (1999), edited by Roger Kimball. See also Carnap's reply to Popper in *The Philosophy of Rudolf Carnap* (1963), another volume in The Library of Living Philosophers. Of many books by Popperians, one of the best is *Critical Rationalism* (1994), a skillful defense of Popper by his top acolyte. □



Susan Blackmore on Psi, Consciousness, and Her 'End of a Personal Quest'

Re Susan Blackmore's "End of a Personal Quest" (*March/April 2001*):

Those who have fought the good fight in academia for thirty years like Susan Blackmore can relate to her decision. There clearly are times when attempting to change what needs changing doesn't seem to get anywhere. At least that is the perception.

Perhaps we can take comfort in the experiences of earlier academics who were paranormal skeptics. Joseph Jastrow continued to educate the public after he retired from the University of Wisconsin. So did Donald Menzel of Harvard University.

Blackmore can be satisfied with her contribution, for she has been a pioneering female skeptic, and well beyond her lifetime she will serve as a role model just as Jastrow, Menzel, and others were before the formation of CSICOP in 1976.

The advantage is that CSICOP's existence will enhance her efforts far more than she might have done alone. That will be the legacy of what Paul Kurtz and other founding fellows have accomplished in just twenty-five short years.

I believe our sustained dedication does cause change in the long run when it is added to the organized body of knowledge that survives for generations and centuries to come.

At the end of our physical lives it is "out like a match." But our spirit, if one can use that term, endures in the form of our published findings. Our history or our biography prevails because the system encourages it to endure.

The Western fiction author Louis l'Amour is reported to have said, "Victory is not won in miles but in inches." Henry Adams wrote that "A teacher affects eternity; he can never tell where his influence stops."

But it was Isaac Newton who captured our mission with the most insight when he wrote in his "Letter to Robert Hooke" on February 5, 1675, that "If I have seen further (than you and Descartes) it is by standing upon the shoulders of Giants."

E.A. Kral
Wilber, Nebraska

Reading her most recent article reminded me strongly of something I've felt since I first stumbled across her near-death experience stuff some years ago: god, do I love Susan Blackmore!

As a member of that class of skeptic without scientific training, no voice in the movement has spoken more directly to me than Blackmore's. To begin with, most of us ordinary folks were Fox Mulder for most our youth, and that makes her, well, one of us. It is easy to imagine many of the greats springing full-grown from the egg, crusty, square-jawed, and ready to fight evil with their first grim breath; by comparison, most of us ended up half-crusty only after many excited, drunken nights debating the inexplicable. It is easy to place the young Blackmore at those parties.

More than any other skeptical writer, she has been the one to instruct us on the details of how one "does science." Although it may be embarrassing to her, the careful play-by-play of her slow drift to skepticism, the detail of her self-reported mistakes or "failures" are fascinating to the science amateur. Most of what I know about science I've learned at the knee of SKEPTICAL INQUIRER or Blackmore. It's even been handy—I work in silviculture, doing brush management using sheep, and every aspect of our evaluation, pay schedule, penalty system, and so on is based on sampling and statistics. Being able to perceive and argue the flaws in the survey procedures used has often helped me protect the name and security of the family business. In a cutthroat field, my unpopular egghead hobby has helped keep us in the game. Thanks.

It's the voice, though, that makes her such a fine example: the gentle, sympathetic, commonsensical way in which she writes is immensely powerful, persuasive, and kind—perhaps too kind, but that's one of those things in which too much is at least as good as too little. The assumption that people are pretty much as smart as each other, and as well-meaning (even in error) is, well, endearing. She writes in a way that suggests that she'd be pleasant in person. I'm quite happy to have her out in the world being my spokesperson, asking everyone to make sense, please, if they don't mind too terribly. . . .

As a final note I might add that she was the first to articulate, in what I was reading, that human selves are verbs at best. This idea becomes strangely comforting after a while, enough so that I credit her book *Dying to Live* with taking some of the dread away from the certainty of death. That's a pretty big favor she's done me, among several. So, here's to Susan Blackmore: I'm sorry she never found any psi, but I'm darn happy she's around.

Daniel Loxton
Victoria, B.C., Canada

I am writing to praise, thank, and support Susan Blackmore, whom I very affectionately call Miss Realer than Real Herself, for her courage, persistence, and determination in going cold turkey (which is *very* difficult to do) in her struggle to escape from and finally kick that terrible, powerful addiction. I am in a similar struggle and have similar thoughts. She is an inspiration to people like myself who are trying to set themselves free from the claims of the pro-supernatural books which are *very* detrimental and deceptive.

Like her, I had one (only) "supernatural" experience, which began March 1993 and had many supernatural things happening that shocked me into believing that maybe it was true. . . . In time I found other non-supernatural explanations for it, and these lingering happenings have absolutely no meaning. Lately I only write the dates, not what happened, contrary to pro-supernatural books, which say to keep writing it.

I wish to thank Susan Blackmore for her years of work and research. She's given them all more than a fair trial, which is more than they deserve.

In my opinion, no matter how convincing these supernatural experiences are, there is always a non-supernatural explanation for it and the search for credible proof of the supernatural could go on for the next 10,000 years and the results will always be zero and none! . . . Thank you Susan Blackmore for showing me the way!

Natali Night
Neotsu, Oregon

In her article "What Can the Paranormal Teach Us About Consciousness?" (March/April 2001) Susan Blackmore argues that "As our understanding of conscious experience progresses, the desire to find 'the power of consciousness' sets parapsychology ever more against the rest of science. . . . The more we look into the workings of the brain the less it looks like a machine run by a conscious self and the more it seems capable of getting on without one."

This conclusion needs to be connected with the subject of Paul Kurtz's "The New Paranatural Paradigm: Claims of Communicating with the Dead" (November/December 2000). The classic objection to near-death experiences as evidence for the existence of a conscious self separable from the patient's body is that such experiences are all experiences reported by—Surprise! Surprise!—still-living persons. This objection to such evidence can be overcome only if the experiences reported by the of course still-living patients include information which could only have been acquired, presumably by ESP, at times when there were no ongoings in the brains of those patients. . . .

The only case I know which even appears to satisfy this requirement is one recorded by Michael Sabon in his *Recollections of Death: A Medical Investigation* (New York: Harper and Row, 1982). A patient is alleged to have provided, after her recovery, a blow-by-blow account of the activities of the surgical team at times when she was reputedly brain dead. But this case depends on the unsupported testimony of the author: which, in a matter of such eschatological importance, is quite scandalously inadequate. In October 2000 there were reports in the United Kingdom press of an investigation by doctors Sam Parnia and P. Fenwick of the supposed recollections of survivors of cardiac arrest. These recollections were welcomed by some Bishops as evidence of death survival. But after the findings were actually published—(in the January 2001 issue of *Resuscitation*) it became obvious that the "memories" of the patients had had no cognitive content.

Antony Flew
Reading, England

In her article "Giving Up the Ghosts: End of a Personal Quest," Susan Blackmore mentioned that in 1853 Michael Faraday published a report on "table tipping." Readers might be interested to learn that Faraday wrote two articles in 1853 on this subject. The first, "On Table Turning," appeared in *The Times* (June 30, 1853) and a more detailed account, "Experimental Investigation of Table Moving" in the magazine *Athenaenum* (July 2, 1853). Both are reprinted in *Experimental Researches in Chemistry and Physics* by Michael Faraday (Taylor and Francis 1991).

In these, Faraday described a number of experiments he used to investigate table turning, including thin sheets of cardboard placed between the operator's hands and the table and lined up with reference marks on the table, showing that the motive power came from the operator's hands. He also fastened the vertical pivot of a light horizontal lever to the table with the short end of the lever attached to a cardboard sheet between the operator's hands and the table, so that the long end of the lever would magnify any relative movement of the operator's hands and the table. When the operator could see the lever, the table remained immobile. But if the lever was hidden from the operator, the table would move, and the lever would show that the operator was moving the table rather than the reverse.

Derick W. Ovenall
Wilmington, Delaware

Two Critiques of Intelligent Design

Thank you for Taner Edis's "Darwin in Mind" (March/April 2001).

The statement "Design implies a designer" demands just as big a leap of faith as "I know that my Redeemer lives." It is not luminously obvious like "If A is true, then A or B is true." Intelligent Design proponents do not attempt to prove it from simpler statements, nor do they offer evidence. They devote much effort to finding design in the natural world, and then they take the leap of faith.

Intelligent Design fails Susan Blackmore's test: it doesn't help us do science. Adding ID to our assumptions doesn't tell us the value of the Hubble constant or explain how migrating birds find their way. All ID does is give IDers a warm fuzzy feeling.

Alice Anderson
Las Cruces, New Mexico

Re "A Bit Confused" (March/April 2001). Granted David Roche wanted to use information theory itself to refute its use to deny Darwinian evolution, but there is a much simpler argument.

Intelligent design proponents are simply wrong when they claim information is only rearranged or degraded by mutations. Random mutations do *four* things, not two. On a gene a "G" can be dropped or eliminated; a "G" can be changed from a "G" to something else; a "G" can be moved to another location; and a "G" can be doubled or repeated several times. This adds for sure to the information that is subject to selection. Mutations *do* add information.

P.M. deLaubenfels
Corvallis, Oregon

In "Darwin in Mind" Taner Edis writes "all functions can be expressed as a combination of rules and randomness." After conferring with the author, I would like to try to clarify this to readers who, like me, were not familiar with recent developments in computability theory.

The equivalent of Gödel's incompleteness theorem in terms of the capabilities of machines is the fact that there are functions that cannot be computed by Turing Machines (Turing Machines are a formalization of the functional capabilities of any modern computer; the standard reference is *Elements of the Theory of Computation* by Lewis and Papadimitriou, Prentice-Hall, 1981). It can be shown (cf. Section 4.6 of the above) that nondeterministic Turing Machines cannot describe any more functions from finite strings to finite strings than deterministic Turing Machines can, since the former can be simulated by the latter. Replacing nondeterminism by randomness changes little with respect to the above-mentioned type of function.

But in fact, the quoted text should not be read as that even Turing-uncomputable functions can be implemented by machines that "flip a coin"; it rather intends to convey that any infinite sequence of function values can be obtained by applying an appropriate machine to an appropriate random infinite sequence (as defined in Edis 1998b).

Mark-Jan Nederhof
Saarbruecken, Germany

It's understandable to me why the concept of Intelligent Design is believed by so many. After all, those who believe in this concept designed something in their lives, and it is their personal experience that they can identify with the concept of Intelligent Design. Choosing to have children, building a home, creating a new business, and designing a computer program or a blueprint are all

actions of intelligent designers. Certainly Bill Gates, Henry Ford, and Thomas Edison were intelligent designers. Intelligent Design is a production of the believer's own experience onto a blank screen which they call "God, the intelligent designer."

Newton Joseph, Ph.D.
Porter Ranch, California

Sheldrake's Staring Research

Rupert Sheldrake ("Research on the Feeling of Being Stared At," Follow-up, March/April 2001) reports "highly significant positive scores in the looking trials and scores close to the chance level of 50 percent in the not-looking trials." Sheldrake's figure 1 shows *that subjects reported feeling a stare on* 55 percent of the trials. Sheldrake says that exactly half his trials are stare trials, so that subjects, by biasing their response toward stares, are more likely than chance to be right on a stare trial.

In the limiting case, a subject who always reports feeling a stare would be right on all the stare trials, which Sheldrake finds very interesting, and wrong on all the no-stare trials, which Sheldrake finds uninteresting. Yet no reasonable person would say that this subject could detect stares.

Marks and Colwell's ("The Psychic Staring Effect," September/October 2000) subjects also report more stares than no-stares. Easy calculations show that on each of the four blocks of sixty trials, subjects *reported about thirty-three stares and* twenty-seven no-stares.

If Sheldrake had run the second control suggested by Thaddeus Cowan (Letters, January/February 2001) he would have discovered his subjects' bias.

Part A of Sheldrake's figure 1 reveals an additional bias. He runs about ninety-eight no-stare trials for every 100 stare trials, not equal numbers as he asserts.

Sheldrake disputes the hypothesis that subjects learn patterns by saying of Marks and Colwell's experiments, "significant improvement occurred *only* in the looking trials." Marks and Colwell's table 2 shows the average correct no-stare responses increasing monotonicly from 13.50 in Block 1 to 16.00 in Block 4. The average number of correct responses increased by 2.50 on no-stare trials and by 2.25 on stare trials.

Alice Anderson
Las Cruces, New Mexico

Sheldrake misrepresents his data, and Marks and Colwell followed him to a certain extent. One shouldn't distinguish the conditions "looking" and "not looking," but "feels a stare" and "feels no stare." The reason is we know that there's 50 percent looking, but we don't know a priori how many people will feel stared at. We therefore can only meaningfully compare the expected distributions with the actual distributions in the feel and the no-feel conditions, i.e., perform statistics.

In Marks and Colwell's Experiment Two, the subjects exhibited different degrees of paranoia. They felt stares between 43 and 70 percent of the time. All in all there were 1,267 stares felt, and given the choice of the random sequences one would expect 662 of these to be correct. In fact 658 were correct, almost exactly what one would expect, and similarly for the unfelt stares. The significance that Sheldrake sees in "two out of three sessions" is just an artifact. All subjects were exposed to the same random series, resulting in imbalances in the number of stares and no-stares.

Sheldrake's data can be summarized by saying that his subjects apparently felt being stared at in 55 percent of the cases, and were correct five out of nine times, in both the feel and the no-feel condition. The data of Marks and Colwell are more precise, and from them we can infer that in the first block of their Experiment One (without feedback) 54.9 percent stares were felt (Experiment Two had 58.6 percent), and that in both conditions (feel and no-feel) almost exactly 50 percent of the guesses were correct, just as one would expect. In none of the four blocks is there a significant difference in correctness between the feel and the no-feel conditions. In their last block the percentage of subjects who felt a stare has dropped somewhat, to 52.8 percent (possibly because of a learning effect), but the correct guesses number about 58 percent. The corresponding p-value for that block is 0.00005.

Summarizing, Sheldrake claims that "correct" significantly often goes together with "looking." He is wrong because he misapplies the statistics. It's an illusion caused partly by the paranoia of the subjects in such experiments.

Jan Willem Nienhuys
Waalre, Netherlands

For over fifty years I have participated in thousands of surveillances, during which individuals were kept under observation for hours, days, weeks, and at times months.

The average Joe or Jane never became aware that he or she was being watched. I do not recall anyone stating later that he or she had any impression they were under constant surveillance. Many were amazed their movements had been observed or even photographed.

There are persons whose actions indicate they fear being "stared at." These are professional criminals or chronic worker's compensation claimants caught in the past and warned by their unscrupulous lawyers to be careful in the future.

Of course, once in a while a subject may become aware of a surveillance if the operative is inexperienced or some unanticipated factor creeps in. Even Sherlock Holmes suffered this tragedy.

Patrick J. Leonard, Sr.
Private Investigator/Security Consultant
Braintree, Massachusetts

I read with interest various articles concerning Rupert Sheldrake's "Feeling of Being Stared At." In their determination to refute Sheldrake's claim of significant experimental evidence that people can tell when they are being stared at, I think his critics fail to acknowledge that the effect may be real, but due to subtle but natural causes.

One can clearly detect a stare by glancing up and meeting the starer's eyes, an ability that appears to be "hard-wired" into our brains. One can also sense it by the behavior of others—the "someone behind you" effect, for example. Auditory and non-central visual clues are especially promising explanations, as they are likely to produce the vague feeling subjects usually report.

From an evolutionary perspective, few would argue that the ability to sense stares is not a valuable survival trait. The idea that people can process subtle sensory clues seems more reasonable to me than that we can detect and respond effectively to structure in pseudo-random sequences. Although Marks and Colwell support the latter argument with citations, an experimental demonstration using the sequences in question would be more convincing.

Craig Duncan
Silver Spring, Maryland

David Marks responds:

Thanks for Craig Duncan's letter. The whole point of our SI article is to show exactly what the writer suggests—that the staring effect is "due to subtle but natural causes."

QED?

I am confused and amused by Rupert Sheldrake's comment ". . . the failure to detect Wiseman's stares implies only that Wiseman was an ineffective starer. Perhaps his negative expectations consciously or unconsciously influenced the way he looked at the subjects." In my opinion, this statement says much about the laxity of control, poor design, and lack of logical scientific approach to all of Sheldrake's trials.

If it is possible for the starer to control the effect on the subjects then it seems to me that this factor should have been controlled in every experiment. With this new "starer power" possibility brought to light, all his previous conclusions are rendered meaningless. Perhaps what Sheldrake has actually found in his many thousands of trials is not that we can feel someone staring at us but that we can force someone to feel our stares. The psychic power, if it exists at all, may not be in the receiver, but the sender.

Glenn Rimbey
Snohomish, Washington

Hallucinations and 'Recovered Memories'

I thought it particularly interesting that Andrew Reisner ("A Psychological Case Study of 'Demon' and 'Alien' Visitation," March/April 2001), despite the item in his bio that he has an "interest in the repressed memory controversy," made no allusion to the distinct possibility that hypnagogic and hypnopompic hallucinations may play a significant role in the belief systems of adult children with therapeutically induced "recovered memories" of childhood sexual abuse.

Many letters of "confrontation" from adult children, principally daughters, to their parents, mainly fathers, cite nightmares which marked the beginnings of awareness of their having been sexually molested. There would be a vivid description of a "faceless specter," usually a hulking figure, coming upon them in the darkness of their bedrooms. Invariably, the daughter, reading weird self-help books like *Courage to Heal*, and/or in therapy for vague symptomology of unknown trauma, inevitably recognizes the "faceless specter" as being "Dad," the mind's worst-case imagining.

The narrative of the nightmare takes on the aura of a horror movie. The victim in the dream/awake state cannot move nor cry out as the specter advances. Sheer terror. In true Hollywood B-movie style, these episodes are apt to appear anytime in a flashback precipitated by a "body memory."

At the next appointment, the regression therapist "explains" the story of the dream in all its Freudian implications of the "incest" which went on for untold years and thousands of incidents, all of which the "inner child" has bundled off to . . . the warehouse of repressed sexual abuse memories. . . .

I would imagine that such nightly events as hypnagogic and hypnopompic hallucinations would be very disturbing, regardless of one's frame of mind. However, with the additional baggage of the belief in decades-delayed repressed memories of childhood sexual abuse, you have a major cause for concern. But does the Recovered Memory Therapy practitioner allay the patient's fears by citing the existence of hypnagogic and hypnopompic hallucinations?

No. These events confirm the diagnosis of childhood sexual abuse to this charlatan of the mind, and another family and another daughter's sanity are on their way to destruction.

Francis X. Kane
Acton, Massachusetts

Elizabeth Targ and CPMC

In his article on Elizabeth Targ (March/April 2001) Martin Gardner wrote that her Complementary Medicine Research Institute is located at the California Pacific Medical Center, "in turn part of the University of California School of Medicine." CPMC is not a teaching hospital and has no formal connection with the School of Medicine of UCSF. Like other community practitioners, some physicians at CPMC may have honorary clinical appointments at UCSF. Such appointments have no real academic significance. I don't know if this is the case with Targ.

Robert Layzer, M.D.
Professor of Neurology (emeritus)
University of California,
San Francisco
San Francisco, California

You Have One Bullet Left

You have demonstrated an almost maniacal methodology in eliminating—unknown to me—each of my cherished myths of the past ninety years, and all within a few, terse pages of your March/April 2001 issue (News & Comment section). Must I subscribe to some cult of fatalism to explain my new subscription to SKEPTICAL INQUIRER?

I bought into the Roswell UFO-crashed-alien-ship scenario lock, stock, and barrel, absorbing documentaries, movies, and evidence-laden books with the relish of a convert, awaiting a president's revelation on each succeeding election exposing the truth of alien visitation! Now David E. Thomas, physicist, tells me it was a balloon experiment fifty-five years after the fact?

And you're going to insist that The Philadelphia Experiment didn't happen during WWII just because L. Sprague de Camp, Robert A. Heinlein, Isaac Asimov, and a few other "witnesses" were there and didn't see it happen? Albert Einstein was there, too, you know.

De Camp's derision of Erich von Däniken's ancient-astronaut books as "solid masses of misstatements, errors, and wild guesses" struck to the core of my earthly soul, forcing my painful confrontation of the meaning of the woeful tears on the cheeks of the stone-faced gods left behind as evidence. There's a tear on the cheek of the Face on Mars which even with photographic evidence you denounce!

John Carter, Warlord of Mars, by Edgar Rice Burroughs, ninety years ago! Don't tell me this is mere science fiction, these swashbuckling adventure books where John Carter, earthling, and Deja Thoris, Princess of Mars, rode off gallantly on their mighty mind-controlled *thoats* to save the planet Mars from extinction. Asimov may well be correct: "When a characteristic like human credulity becomes so widespread in a species, we must suspect that it plays a part in enabling the species to survive."

Perhaps it is the SKEPTICAL INQUIRER which fatefully awaits all of us.

Harold V. Blackman
Montrose, Colorado

Five Times the Hindenburg!

I read with great interest the News and Comment "Retired Air Force Balloon Expert Expands on Origin of 'Majestic 12' UFO Hoax," by David E. Thomas (March/April 2001). A much needed help in the clarification of the Roswell mire, Thomas made one observation that I think demands further clarification. He indicated that "some of the Skyhook balloons were five times larger than the Hindenburg Zeppelin's seven million cubic feet. . . ." Having some familiarity

with LZ-129 "Hindenburg" I can confirm that the most accurate figure for that airship is 7,063,000 cubic feet (Hoehling, 1962) and given this, such Skyhook balloons would then achieve some approximate 35,315,000 cubic feet in size.

While the morphology of such balloons vary with the altitude they attain, if their general shape is cylindrical, I estimate that for a radius of 100 feet (that is a diameter of 200 feet), the balloon would have to approximately 1,125 feet tall. This would render a balloon surface area sufficient to cover approximately 17 acres! My knowledge of aerodynamics is poor and that of even elementary mathematics not appreciably better. However, if these latter figures are correct it would appear to make these balloons the largest flying objects ever created by humankind. Given their phenomenal size and the amount of debris following upon their aerial destruction it appears little wonder that they would well be confused for UFOs. Thomas's confirmation and amplification of this issue, which surely connotes an aviation world-record, would be greatly appreciated.

P.A. Hancock
Provost Distinguished Research Professor
Department of Psychology
University of Central Florida
Orlando, Florida

David E. Thomas and Editor Ken Frazier reply:

An entry in the 1975 Guinness Book of World Records *says the largest balloon ever to fly (up to then anyway) was an 800-foot-tall, 26 million-cubic-feet balloon built for the U.S. Air Force and used for a Martian reentry experiment by NASA on August 30, 1966, above then Walker Air Force Base, Roswell, New Mexico. The 1995 edition of the Guinness record book says the "largest balloon ever built," by Winzen Research Inc. of Minnesota, had an inflatable volume of 70 million cubic feet and stood 1,000 feet tall but doesn't say if and when it flew. It also mentions a high-altitude flight of a 47.8-million-cubic-foot balloon from Chico, California, in October 1972. The 2000 Millennium edition no longer includes "largest balloons" as a category, nor does the Guinness Book Web site. Duke Gildenberg, the source in our article, who worked in the Skyhook Balloon program out of Holloman AFB, Alamogordo, New Mexico, recalls launching a 40-million-cubic-foot balloon; he says a 50-million cubic footer was built, but it's not known if it was ever used. Both balloons were more than five times larger than either the* Hindenberg *or the* Graf Zeppelin II, *according to Guinness the largest rigid airship ever built, at 7,062,100 cubic feet.*

Limits in Drug Assessments

It is logical to apply the same degree of skepticism to treatments with drugs and herbs. I suggest that even the medically accepted "class one" evidence described by Spinella (January/February 2001) falls short of an attainable standard.

Psychiatric research assesses symptoms using rating scales to see if drugs act as antidepressants. This is unsatisfactory because it is an indirect measure that does not reflect the long-term outcome (ultimately a 15 percent risk of death by suicide). A partial (50 percent decrease from baseline score) improvement on some symptom rating scale after 4–6 weeks treatment is the current *de facto* definition of successful treatment. In real life many people require treatment over many months, sometimes years. This uncritical acceptance of only partial improvement as a standard of "success" is a quite extraordinary situation that has passed almost without comment in the psychiatric literature.

Such limitations in assessments have a deleterious impact on drug trials and a great majority of them are nearly valueless. Outside observers might justifiably consider such practices as evidence of standards in academic research that could profitably be re-evaluated.

Further (skeptical) analysis may be found at my Web site, www.psychotropical.com.

Dr. Ken Gillman
PsychoTropical Research Unit
Mount Pleasant, Queensland, Australia

Young Skeptics Project

I was very excited to discover your brand-new Web site dedicated to young skeptics (www.csicop.org/youngskeptics). This is a very valuable took for encouraging young skeptics to learn how to investigate extraordinary claims.

I would like to suggest adding a section on science fair project ideas. Having a list of ideas would attract students looking for science fair topics and teach them how to start asking the right questions. Many of these topics would be of great interest to the public, as they involve common everyday issues. These results may even be publishable, as many of these areas have not been adequately studied (for example, nine-year-old Emily Rosa's study of Therapeutic Touch, publishing in the *Journal of the American Medical Association*, started as a science fair project). Furthermore, these experiments can be performed using everyday materials (often little more than paper and a statistics book), instead of complicated laboratory equipment.

I refer interested people to the ICYR (International Cryobiology Young Researchers) Web site (www.icyr.org/static/sciencefairideas) as an example of the impact a science fair Web site could have. This site lists cryobiology topics that make excellent science fair ideas and do not require much equipment. Examples include how earthworms survive the winter and how ice skates work.

A similar resource for young skeptics would be very valuable. Issues that would make great science fair topics include Tarot cards, ESP, astrology, and subliminal messages. Many stories often found in the SKEPTICAL INQUIRER could also be expanded into science fair ideas. Emily Rosa's study shows that even simple experiments by young investigators can lead to significant insights and findings, and the SKEPTICAL INQUIRER is in an excellent position to lead this charge.

Tani Chen
Arlington, Massachusetts

The letters column is a forum for views on matters raised in previous issues. Letters should be no more than 225 words. Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail to letters@csicop.org (include name and address).

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Massive Infant Stars Rock their Cradle

Extremely intense radiation from newly born, ultra-bright stars has blown a glowing spherical bubble in the nebula N83B, also known as NGC 1748. A new Hubble telescope image has helped to decipher the complex interplay of gas and radiation of a star-forming region in the nearby galaxy, the Large Magellanic Cloud. The image graphically illustrates just how these massive stars sculpt their environment by generating powerful winds that alter the shape of the parent gaseous nebula. These processes are also seen in our Milky Way regions like the Orion Nebula.

Credit: NASA, ESA, Mohammed Heydari-Malayeri *(Observatoire de Paris, France)*

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